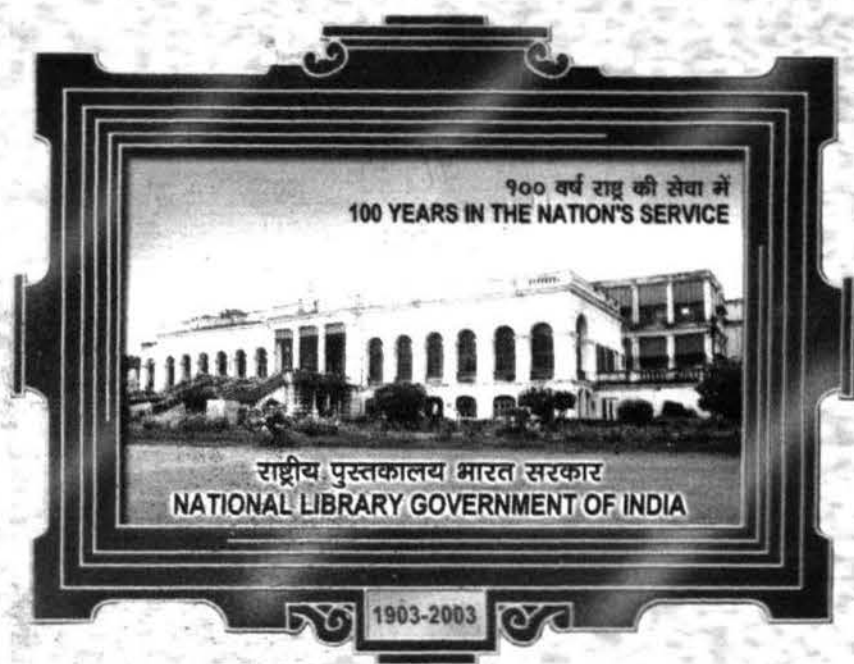


National Library Services

ICONLIS 2004



सत्यमेव जयते

The National Library
Kolkata
2004

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**National Library Services
ICONLIS 2004**

National Library Services

ICONLIS 2004

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Foreword by
Jagmohan
*Hon'ble Union Minister for Tourism & Culture
Government of India*

Edited by
H. K. Kaul



The National Library
Kolkata
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Foreword

The National Library of India is one of the premier institutions of India. With the rich heritage and priceless manuscripts in its possession, the library has emerged as a major resource centre on Oriental and modern studies in this part of the world. From Calcutta Public Library to Imperial Library and later to the National Library in 1948, the Library has come a long way during the last century to occupy a prominent position as a landmark institution.

The National Library has now completed its 100 years. During this period, it has not only steadily risen as the flagship library of the country but has also taken the lead to serve the cause of the library movement. Its new and prestigious premises at Bhasha Bhawan, which would be the most imposing library complex of its kind in Asia, is nearing completion. It also serves as a depository library under the Delivery of Books Act and as such, receives a huge number of books and journals published in India and has a wealth of such material. The Library also houses publications in Indian languages including English and other European languages, besides Sanskrit, Persian, Chinese, Japanese, Arabic, etc. and is able to serve all kinds of scholars.

I am happy that as part of the Centenary Celebrations of National Library of India, an International Conference on National Library Services (ICONLIS) is being organised at Kolkata where experts from National Libraries and specialised institutions from various parts of the world will converge and discuss the latest trends relevant for shaping, developing and modernising the National Libraries in the world.

It is heartening to know that a number of excellent papers have been received from several renowned experts in the field and are being compiled and published in this compendium. These papers cover a whole gamut of relevant and important issues like National Library System and Services, Document Collection/Multilingual Resources, Digital Handling of National Library Collections, Multicultural Diversities, Universal Bibliographic Control, Standards, Legislations, Technologies, Marketing of Services, Multilingual Perspectives, etc.

I have no doubt that ICONLIS 2004 will be found as a forum useful not only for the National Library of India but also for all the National Libraries in the world where matters of mutual concern will be deliberated upon and alternative solutions developed and action plans formulated in different spheres of activities.

I congratulate the organisers and wish deliberations of ICONLIS 2004 all the success. I do hope that this will be a landmark event in the development of Library Services in this region.

Jagmohan
Union Minister for Tourism & Culture
Government of India
New Delhi

March 8, 2004

Preface

The National Libraries of the world have been playing major roles in information collection, storage, processing and dissemination during the past few centuries, but never before did they face major challenges as they are facing now in every activity, whether it is the collection of documents, their processing and preservation or the dissemination of appropriate information selectively to users. These challenges, posed mostly by the IT revolution and growing users' demands are important for the development and progress of each country. So the libraries need to adopt new technology-based methods in order to tackle the issues effectively. Thus, it is becoming necessary for National Libraries to redraft their agenda and modalities for action.

The National Libraries are at the crossroads today. There is the need for cooperation among all national libraries especially among the National Libraries of the information-rich and the information-poor countries to bridge the digital divide. It was with these concerns that the Board of Management of the National Library, India decided to organise an International Conference on National Library Services (ICONLIS 2004) as part of its centenary celebrations. The Board wanted to organise this international conference with a difference. Therefore, it was decided to:

- a. Charge no registration fee for invited and selected delegates;
- b. Provide free hospitality to invited delegates for three days; and
- c. Make the international conference interactive and let all technical staff of the National Library of India participate in it and benefit from its deliberations.

This is the first time that the National Library, India is organising an International Conference on National Library Services in which delegates from 23 countries are participating. It is a moment of joy and celebration for the entire staff of the National Library of India. It is gratifying to note that the papers cover a wide range of subjects including Document Collection, Multilingual Resources, Digitisation Services, Bibliographic

Control, the Legal Deposit, Use of Standards, Legislation, National and International Interlending and Document Supply, Use of Advanced Information Technologies, Preservation and Conservation and Users' Services.

I am grateful to the Board of Management of the National Library, India for selecting me as the Coordinator of the first International Conference on National Library Services (ICONLIS 2004). While I have been working from the DELNET office in New Delhi, I could not have managed without the advice and help of several officials of the Department of Culture, Government of India, Board of Management and the National Library, India. I am grateful to the Chairman of the National Library Board Hon'ble Shri Jagmohan, Union Minister for Tourism & Culture, Government of India who took a personal interest in this international conference and who wanted it to benefit the National Library staff and had desired that it should preferably be organised in the new building of the National Library. However, while the new building was ready, in the absence of the formal inauguration, this international conference was organised in the Taj Bengal which is adjacent to the National Library with the participation of the technical staff of the National Library, India. I would like to thank him warmly for contributing a foreword to this volume.

I am grateful to Shri Dhanendra Kumar, Secretary and Shri K. Jayakumar, Joint Secretary, Department of Culture, Government of India for advice and help. I would like to thank Dr. O. P. Kejariwal, Chairman, Prof. P. B. Mangla and Prof. R. P. Kaushik, my colleagues on the Board of Management for their advice and guidance.

The organisation of ICONLIS 2004 in Kolkata could not have been possible without the help of the Advisory Committee comprising Prof. Probir Roychoudhury, Former Professor, Jadavpur University and Dr. R. Bhattacharjee, OSD, National Library, India, Kolkata. I am grateful to them. My special thanks are due to Dr. R. Bhattacharjee and the staff of the National Library, especially the members of the various committees who put in a great deal of effort to make ICONLIS 2004 a success.

I am grateful to the managements of various National Libraries for sending their representatives to participate in ICONLIS 2004 and to experts who contributed papers to this volume. The publication of this volume was undertaken in New Delhi at the DELNET office. I would like to thank

Ms. Sangeeta Kaul, Network Manager, DELNET for assistance in the publication of this volume and Mr. K. N. Jha of the India International Centre Library for help in administrative work.

H. K. Kaul

Coordinator, ICONLIS 2004
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April 30, 2004

Introduction

H. K. Kaul

A National Library is a major repository of a country's rich literary and cultural resources. In each country it is the final milestone which a researcher has to cross in order to refer to reading, reference and research materials. Over the past few centuries, each National Library, the world over, has created checks and balances between the published and unpublished resources, between the new and the old technologies, between the new emerging and the good old standards, between the growing users' demands and the supply of the materials for them, between the highly skilled and the unskilled staff, among a host of disparities the IT revolution has lately been bringing with it year after year. All this is happening within the limitations of financial and physical resources, lack of skilled staff, lack of cooperation between the libraries at national and international levels and above all, in many countries, due to the lack of a well organised National Library System. National Library services have thus been taking a back seat in some countries. Also, due to competition from highly advanced libraries in specialised fields, the National Libraries have neither in-depth resources in such fields, nor are they comprehensively general in nature. As a result, two streams of services have been growing in the countries, one through the national and public libraries, and the other through a host of decentralised but specialised libraries all making efforts to serve the users in each country. This competition to National Libraries has changed further as digital resources on a country are emerging on the Internet through a wide variety of resources. Thus, authors and publishers who contribute to the universe of knowledge in print and digital forms, are changing a lot and are scattered all over the world. Those days of excellence when every word was edited repeatedly before it was printed are slowly disappearing, as anyone today can publish anything on the Internet, leave it there for ages, or remove it the next day. This has led to the impermanence of the word and wholesale copying of ideas without contributing anything new to it.

The question arises, therefore, should a National Library create a decentralised virtual library or go on centralising every resource and activity in one campus or a few campuses ?

A National Library should have collections that are primarily of use to the people of its country, and therefore document collection processes should selectively enrich it. These processes, including the procurement of documents as part of the legal deposit, documents received as gifts or purchased selectively cannot cover everything or anything important. A National Library may not be able to buy every document or every good document, and therefore if it has to remain serving the users effectively, should it not cooperate with other libraries and networks? Should it not maintain a high level of cooperation at the national or international levels?

Documents are now available in all kinds of forms, printed, manuscript, digital or online. The debate remains: in the online environment, what should be the scope of a National Library collection and what should be its methodology for collection development?

Collection development is a very skilled job and we find that wherever we use subject and area experts for help, we achieve better results. The area experts can tell us what kind of document would be useful to the users in an area, say to a tribe, a group of people or scholars working in different disciplines. The National Libraries, I am afraid, will have to have close cooperation with the subject and area experts, even in selecting documents through the Web. One can avoid buying or acquiring published documents, but one cannot go through millions of search results one gets on the Web against a simple query. Thus subject specialisation is going to be important in future besides technology experts. Electronic resources which are becoming available through multimedia presentations, wireless communications and Internet resources are going to pose major challenges in future.

Digitisation of non-copyrighted National Library documents demand the use of appropriate selection methodologies. And, at the same time a high degree of cooperation with other libraries, networks and agencies to avoid duplication and misuse of financial resources. The motive underlying these efforts is to develop a national collection which includes heritage collections of the best works both in print and digital forms. A national collection so developed should become accessible through the Web.

This national collection should cover publications in all languages recognised in a country and efforts will have to be made to ensure that the best content in national languages also becomes available through the Web. For instance, the Department of Culture, Government of India have just organised the International Conference on Digital Libraries (ICDL 2004),

the main aim being to gain inputs for starting digitisation programs which are useful to people.

Before digitisation came into force, the creation of National Bibliographies and National Bibliographic Databases have been developed in several countries. While the traditional role of a National Bibliography has been to print bibliographic information about books published and received in a National Library so that users could access this information fast to buy relevant publications, the National Bibliographic Database should be online, both current and retrospective in nature. In this online environment, where the National Bibliographic Database is effectively prepared, you may wish to debate whether the present form of the National Bibliography needs to undergo a change. What sort of change? What would be the next form of the National Bibliography?

The use of library and communication standards and protocols need to be the best and common among National Libraries. The National Library has just adopted MARC 21 and retro-conversion work on nearly 2.5 million books has begun. The use of common standards is going to facilitate resource sharing at the national and international levels. Should a National Library cooperate with national and international library networks? Could not a National Library Network support a National Library in giving more access and information service to users? For instance, DELNET, the Developing Library Network in India, networks nearly 750 libraries in India and six other countries and offers access to more than 3.5 million catalogue records. Also, the National Library of Canada cooperates with the *Canadian Government's Online Service Initiatives* and *Virtual References Canada* to give better resources and access to its users. I am told Australian National Library has also close links with the Australian Library Network.

Thus IT as a tool, which the National Library is using and should use further to ensure, for instance,

- a. digitisation of documents
- b. online access to electronic publications
- c. archiving of electronic publications
- d. making of knowledge resources available to every user
- e. advances in Web technology
- f. providing pinpointed information to the public even in remote parts of a country.

This makes it important that printed and electronic resources are conserved and preserved. And, this process becomes a major agenda for a National Library to achieve. All these efforts have to be made to generate better information knowledge facilities so that every individual in a country, including the physically challenged have access to appropriate information in any language, on any subject, available anywhere in the country and outside the country. We have to ensure free public access to information in the digital and print forms in any part of the country. This way people will not only be able to access information but explore their own treasures present in the National Libraries.

The National Libraries thus have a major agenda before them which no other library in a country has. The delegates at ICONLIS from 23 countries made better presentations and offered views on a variety of important issues. The basic issues for discussion were listed in a pamphlet called Talking Points. While many issues were discussed, some could not be discussed in detail due to lack of time. I wish we had more time at our disposal.

We had developed two tracks at ICONLIS, one for all presentations in the International Conference and the other for International Sectional Committees. The Chairman and Convener of each Sectional Committee can continue their deliberations even after ICONLIS 2004. In addition to the Director, National Library of India, I would be pleased to be associated with the deliberations of the Sectional Committees to lend the support and help in making their functioning possible.

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The Contribution of Information Technology to the Services of the National Library of China

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NLC, a library with nearly one hundred years of history, has amassed a rich cultural foundation, and has a rich collection of rare books, including the inscriptions on bones or tortoise shells of the Yin dynasty which is traced back to 3,000 years ago. NLC has made great explorations and practical applications of Information Technology (IT) in the last decade. This article revolves around the contributions of IT to the service of NLC, the progress achieved in the aspects of digital library and the tasks undertaken and challenges encountered in the contribution of IT to library service.

1 Introduction

The development of IT, especially the rapid development of network technology, brings out a new revolution in information and knowledge acquisition and utilisation. As the traditional provider of information services, a library plays a key role in this revolution:

In consideration of the complexity and importance of the library collection and operations, NLC (initially named the Capital Library) established in 1909, has begun to attach great importance to the utilisation of modern IT in service improvement. The Library has a rich collection, some of which belongs to the royal collection in Jixi Palace of the South Song dynasty of over 700 years ago. The earliest collection can be traced back to the inscriptions on bones or tortoise shells of the Yin dynasty 3,000 years ago. The number of books and literature of various kinds in NLC's collection amounts to over 24,000,000, increasing by the rate of 600,000 to 700,000 volumes per year. NLC is in possession of precious collections, such as rare editions, ancient books, inscriptions on ancient bronzes and stone tablets, rubbings, ancient maps, lost volumes of Dunhuang, documents

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of minority nationalities, and manuscripts of the notables. The total number of those materials amounts to 2,600,000 volumes. NLC opens 38 reading rooms to the public 365 days a year. The average visits stand at 12,400 per day. The number of volumes in circulation per day is over 10,000. It is difficult to manage such a large collection and provide service to consumers without modern IT. NLC introduced the NEC mainframe system in the mid - 1980s, and established its own LAN at the beginning of 1999. NLC has made great strides in using IT to improve inner operation and other service methods. All these progresses, especially the event that China Digital Library Project has been ranked among key projects of the "Tenth Five - Year Plan"(from 2001 to 2005), bring NLC into the new era of IT reconstruction of traditional library service.

NLC continuously improves consumer-oriented service, while improving library service through IT. Modern IT not only provides tools facilitating the various services, but also places more requirements on the library:

(1) Modern libraries should thoroughly change the book-oriented and semi-enclosed service system, and focus on the requirements of readers. NLC adopts all kinds of methods to make its service available to the public; make accessing information more convenient; transfer the focus of library work from borrowing and reading of books and periodicals to meeting the demand for knowledge.

(2) Competition will intensify, either among current online libraries or future digital ones which will appear in large numbers. The key to survive is providing a better service. Therefore, NLC has made a great effort in the development of a characteristic collection (such as Stone Inscription Rubbings repository, etc.) and provision of special service, and has achieved a lot.

(3) Networks bring unprecedented prosperity to knowledge exchange; without networks, no library could provide so much knowledge. Thus, the staff engaged in library service should acclimatise themselves to the role of "information guide" as soon as possible, rather than the traditional provider of written information.

The second part of this article focuses on the contribution of IT to NLC service, the third part revolves around NLC's efforts in digital library construction, and the fourth part discusses the tasks undertaken and challenges faced in NLC service.

2 IT Contribution to the Improvement of NLC Service

NLC has always applied IT to the improvement of its business system. In particular, it recently introduced a new integrated management system, which integrates documentation, management and service engineering into one large system, and is a clear improvement over the old system in efficiency, function and security. Meanwhile, NLC has also introduced and developed a number of databases, in order to provide more information services for users. In addition, NLC is employing IT in improving the service for readers who arrive at the library.

2.1 Upgrading Traditional Service Through NLC New Integrated System

In October 2003, NLC new Computer Integrated System was formally brought into operation. In addition to a whole process implementation, the system enables transparency of documentation and flow. It not only has powerful functions of processing, editing and managing books, but also provides a flexible network service. A user may at first log onto the homepage of NLC (<http://www.nlc.gov.cn>), and then access the NLC Online Public Access Catalogue (OPAC) system by means of his user card (anonymous access is also allowed). Next the user may send a call slip to the book database. If he has confirmed that the book called has been transferred to the front desk, he can directly enter the library to read it. Thus it helps users save considerable time and energy. The system also supports book processing and search in languages such as English, Japanese, Russian and Korean.

Through the system's Web OPAC service, users can retrieve book records, browse single-volume information, look over communication information, book single volumes, make copies and renew requests, and retrieve external databases and the like. The Web OPAC has powerful retrieval functions, including browse and retrieval service. The two function modules allow users to both browse index and lists, and also use different retrieval methods such as simple retrieval, multi-field retrieval, multi-database retrieval, advanced retrieval, and common command language (CCL) retrieval. These functions are flexible and effective, greatly improving the search function of the old system.

2.2 Various Databases Bring Convenience to Users

Currently NLC not only provides the above convenient retrieval methods for its own library index, but also has accumulated a number of databases over ten years of efforts in self-design, purchase and cooperation

with other entities. For example, National Library Information Consulting and Cooperating Net, sponsored by NLC Information Consulting Centre, includes over 30 databases such as the Agricultural Practical Technique Full-text Database, Life Encyclopedia Database, China Modern Local History and Biography Source Index, and Music Database. NLC Electronic Information Service Center has more than 70 commercial databases such as Chinese Enterprises and Companies Database, *People's Daily* Full-text Database, China Doctoral Dissertation and Master's Thesis Full-text Database, Inspec Database, and IEEE/IEE Full-text Database.

In addition, NLC applies IT to the exploration and development of featured library resources. Its 2003-2005 plan covers 11 repositories, including Local History Digital Repository, Stone Inscription Rubbings Repository, Oracle Bone Inscriptions Repository, and Yongle Encyclopedia Repository. At present, Chinese Rubbings Repository has over 16,000 metadata and over 21,000 images. The contents are listed chronologically (stone inscription years and months), and provide search methods such as single-field simple retrieval, multi-condition filtering advanced retrieval, and metadata content-related related retrieval. Oracle Bone Literature Repository is another featured database set up based on the library's existing collection of 35,651 tortoise shells and bones, which includes accession number, source number, men in charge of oracle inscription, dynasties, excavation place, attributes of tortoise shells or bones, sizes of tortoise shells or bones, diction contents and categories, rubbings sources, rubbings size, contents composing, and descriptions, etc.

2.3 IT Contribution to the Improvement of Reader Services

NLC's gigabit LAN terminals extend to every reading room of NLC. Users on these terminals are entitled to all free services such as search of library index, borrowing and reading.

In April 2000, NLC began to deploy new multi-functional user cards, replacing all old cards for readers and borrowers. The new move not only provides convenience for users, but also improves the library's user management quality, because the library can take statistics of and analyse user information such as reader flow and user interests through the user database.

Moreover, NLC is a large building with a complex structure and many reading rooms, causing inconvenience to newcomers. With this element considered, NLC has set up a computerised touch screens system to assist readers navigate the library.

3 Efforts Made by NLC on Construction of Digital Library

Besides improving library services using Information Technology, NLC and the Chinese government are aware that digital libraries can replace traditional libraries in many service areas to provide better and varied services and reduce cost by joint construction and sharing information. Thus, digital libraries will become an important trend of traditional libraries. In recent years, NLC has done its best to explore and practise in respect of digital libraries.

3.1 Primary Research of Digital Library

Since the middle of the 1990s, NLC has conducted several essential research and experimental projects on digital libraries such as:

- “Knowledge Network – Digital Library System Project” under the leadership of the Ministry of Science and Technology has been completed by NLC and the Institute of Computing Technology, Chinese Academy of Sciences in 2001. A developmental digital library system has been primarily established and it has functions of network management, multimedia information query and retrieval, storage and retrieval of information of great capacity and privilege management of intellectual property etc.
- “Digital Library Application of China under China’s Demonstration High-speed Network Environment” Project under the leadership of the Ministry of Science and Technology of China has been completed by NLC and Beijing University of Aeronautics and Astronautics by 2000. This project mainly involves research on digital library operating on the basis of high-speed broadband network to support audio and video.
- “A Developmental Digital Library of China” Project has been completed by NLC, which is the leading unit, and other six public libraries in 2001. This project establishes a distributed, extensible and interoperable developmental digital library with a considerable scale of contents and resources.

3.2 NLC Facilitates the Approval and Construction of the China Digital Library Project (CDLP)

NLC submitted an application to the Ministry of Culture in 1998, which was approved and now executes the “China Digital Library Project”. “Second Stage and Foundation Project of NLC and CDLP” was approved

by the State Council and listed as a key construction project of the “Tenth Five Year” Plan (from 2001 to 2005) in October 2001. In the same year, the Ministry of Culture called 21 ministries and committees together to establish the “Joint Conference of CDLP”, the office of which is located in NLC. At this conference, an overall scheme of construction of CDLP is proposed and “an expert advisory committee of project construction of CDLP” is set up acting as a consultation and instruction institute to ensure that the library project is implemented in a scientific and orderly way.

In order to carry out scientific management and quality control, four consultation institutes are set up under the “joint conference” office, which are subject to adjustment according to concrete requirements of project development. These four consultation institutes are: “instruction committee of resource development”, “technology instruction committee”, “instruction committee of standard criteria” and “instruction committee of laws and regulations”.

On the basis of project instructions of step-by-step development of CDLP by the State Council, China Digital Library Corp., Ltd. came into existence with the approval of the State Council in April 2000. The company specialises in establishing and operating the overall information service system of library project, research and development as well as application and popularisation of core technology, establishment of criterion of related technology, provision of professional information, overall resolution project of digitised information, management of digital copyright and commercial service and corresponding capital operation.

3.3 Development on Construction of the China Digital Library Project (CDLP)

The project has established and completed the *First Stage Scheme About Construction of CDLP (from 2000 to 2005)* and *Implementation Plan About First Stage Scheme About Construction of CDLP*; the project carried out profitable exploration in the resolution of intellectual property rights and organised the development of copyright management system; in terms of technology research, the project developed and completed a digital resources processing system, digital library application system, regional service system of digital library and processing system of digitised and industrialised production of literature; in respect of construction of digital resources, the project set up the “literature digital centre of NLC”, established developmental digital processing product lines of books, periodicals and micro-card literature, which have hundreds of diverse components, and are

capable of making 50 to 60 million pages image data annually. The centre cumulated digital resources exceeding 10TB combining resources from other culture institutes, which include literature, art, law, science and technology, education, tourism and so on. It also carried out digitised processing of ancient books relying on the collection of NLC. The persistent preservation of library information is a vital problem, in order to effectively preserve and use digital resource, NLC has established a serial of standards and specifications for digital resource building.

3.4 National Cultural Resources Sharing Project

National Cultural Resources Sharing Project (<http://www.ndcnc.gov.cn/>) was launched in April 2002. More than 40 multimedia repositories have been created since then, which covers literature, drama, history, travel, music, etc. The national centre of the project was located in NLC. The project will integrate the culture resources of the library, archive, art gallery, theatre, and promote Chinese culture on the Internet. The project has established a culture resource navigation system through the joint culture information catalogue. It provides public service by hierarchical service centres.

3.5 Efforts Made by China Digital Library Project to Further Improve Customer Service

After the completion of the first phase project, the China Digital Library Project will provide customers with more abundant and flexible services, especially individualised ones and knowledge service:

Individualised Mylibrary service suits the service mode of libraries. Users can select needed information (or maybe your preferred information given by the system by analysing the records of your usual use) from all digital resources of the library provided on the library website, and store such information in Mylibrary. In future visits to Mylibrary, users will be served with the latest information related to those stored previously. Users may log onto Mylibrary with Cookie-supported browsers, set the user's names and passwords, and select and collect the library resources and other Internet resources according to their own knowledge structure and demands. Dynamic Mylibrary pages will be established and customised information will be displayed after users finish their setup. Individualised service will provide users with many functions: Bookmark, customisation of library digital resources, notice of latest information, search engine connections, customisation of Web page style.

Knowledge management systems and establishment of subject word-stock based on ontology and semantic Web. We have quite a lot of work to do on this programme. As a very important service tool of national information infrastructure, this project will generate long-term benefits. In the China Digital Library Project, resource construction and information organising management system based on knowledge concept need to achieve such goals as knowledge sharing, knowledge innovation, knowledge diffusion, and knowledge appreciation. At present we are working on research and testing of related key technologies. For instance, we are researching on building the catalogue of digital information and creating the knowledge information management system by ontology, etc.. A prototype system of culture grid service system based on Uniform Content Location and Personal Content Location is being developed.

4 Service Tasks and Challenges Faced by the National Library of China

Application of IT in the National Library of China has been confronted with major problems concerning funds, human resources, and service concepts. Thanks to the library's reform and technology improvement, some problems have been conquered. But new ones, as well as new tasks will come into existence. Current tasks and challenges are as follows:

4.1 Integration of historical information resources and information systems: Due to the differences in technology and service purposes between different periods, great differences exist in the quality of many databases of the National Library of China. Such differences concern integrality and consistency of embodied information, extent of detailing, searching methods, formats, and upgrade of hardware and software. Such inconsistency created problems for maintenance and development of databases. More importantly, it caused obstacles when users visit the Website and utilise the information, and thus negatively influenced the service quality of the library. Therefore, we must solve the outstanding problems in the course of service innovation through information technology.

4.2 Further, implementation of people-centred service in the library automated information system and digital library system: traditional library service is relatively simple, but has created good criteria during its hundreds of years of application. Modern library automated systems and digital library systems were developed in the environment of rapid IT development. The development, however, was basically completed by IT technicians who were not familiar with the operation of libraries. Therefore we should pay attention to and coordinate the relation between information systems and library operation.

4.3 Digital libraries will face various challenges. Copyright protection is a key problem in the development of digital libraries, which cannot be ignored. At present, three methods have been used to address the problem of copyright. Firstly, to resort to the government, we have cooperated with the Copyright Protection Centre of China and made some progress. Secondly, we directly negotiate with the owner of the copyright, and manage to obtain their authorisations. Thirdly, we cooperate with publishing houses and gain some progress. Though the methods introduced above can resolve some problems but only a small portion, and the cost is very expensive, NLC is still exploring some better ways to solve the problem.

Since digital libraries are a newly emerged market, they are also changing and developing rapidly. Up to now there is still no standardised architecture or service system for digital libraries. Great differences exist in technical methods and standards of digital libraries in different places of the world, creating obstacles to resource sharing and customer service.

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National Libraries: A Perspective for a Leading Role in the E-services Epoque

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A principal aim of this work is to stimulate further discussion within and among national libraries and to underline their leading role in the field of E-services, especially E-learning and E-reference. Initially we quote a brief introduction to the history and the mission of the National Library of Greece and continually, we cite ideas about convenient access to the E-services within a patron-centred framework where the librarian is the patron himself. Finally we underline the role of the National Libraries in the social interaction and we give directions for a new more active role that the librarians of the National Libraries are able to play for the community's good.

1 Introduction

1.1 Brief Historical Review

In 1829 Governor John Kapodistrias was instrumental in establishing the Foundation of the Public National Library and its co-installation with the National Museum in the island of Aigina. Three years later, according to relevant decree, "The Library is separated from the Museum and becomes independent, as a public library from so on". In September of 1834, the Public Library was transferred in Athens, having in its occupation more than 8000 volumes, preserved initially, at "Near the Ancient Market Hot Springs" and later at a Church, nearby the Cathedral. The donations were all time overtaking and the wealth of book supplement demanded the quest of a new establishment place.

In 1838 the University Library was constituted in the well-known Kleanthi's Residence, at the foot of the Acropolis. Having as a basic kernel the 52 volumes of historical and geographical books, which had been donated by Quinthrop, Massachusetts President, in 1842, it had a treasure of more than 19,000 books. In March 1842, the two libraries were united

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administratively in the same place, in the SE side of the upper floor of the Athens University Building. George Typaldos Kozakis was the first director, for 20 years, since 1842. About 80,000 volumes were donated including the King's, Emperor's, and individual donations.

In 1866, in conformity with royal decree, the two libraries amalgamated administratively in one "The National Library" that remained united from its constitution until 1890. Facing serious problems, as lack of place and organisation, remained at the University till 1903, when a staff increase took place and a new organisational structure was voted. This is the year, when a new ancient architectural order, marble building was manufactured, thanks to the donation of the exceedingly rich Valliani Brothers, on the schedule of Danish architect, Theophilus Hansen the Younger, while the supervision of the performance and construction had the German architect, Ernst Ziller under the surveillance of a specific committee.

In 1929 the Director of The National Library of Greece demanded from the University separation of the two libraries "as a result of the specification, on the contrary of the wrong prevalent tradition of catholicity". The independent National Library of Greece has just been born.

1.2 Mission

- The National Library of Greece (NLG), as the central library of the region, has as its primary mission the collection, the process, the preservation and to highlight the material of their collections in order to be accessible to the readers and the general public.
- Also it develops activities to reinforce the cultural and educational life of the Region. Its function is to be the official national centre for information, in library science, bibliography and for preservation and digitalisation of the printed material.
- On the other hand, it manages the national collections of material of other libraries in Greece and abroad, which act under the Greek authority.
- It is also the national connecting centre between the Greek public libraries and with other organisations and institutions abroad. It draws up and publishes the retrospective and the current national bibliography and also the material of the catalogues that belong to their collections.

- It collaborates on library matters with other organisations and participates in research programmes. It keeps up with new developments of the field, for the application to the improvement of the services that provides to the public. It represents the country abroad in matters that are responsible.
- N.L.G. having in its occupation more than 4 million volumes of books, papyrus, palimpsest, Byzantine manuscripts, incunabula, rare and special publications, valuable parchments, illuminated scrolls and codices, historical documents as archives of local ethnic material, lithographic paintings, wood-engravings and old maps, has to face the challenge of playing successfully the dual role, as a depository of the national cultural creativity and also, as a transmitter of knowledge and information worldwide with adequate and modern means.

2 E-services Epoque

In Section 2 we will examine the services' situation in the National Library of Greece and we will analyse our thoughts about their modernisation in a national collaborative framework.

As it was highlighted at the last IFLA Conference, "in the field of librarianship and information science, certain methodologies for the measurement of efficiency, effectiveness and quality of services have been developed." It stands as a great challenge for national libraries to define strategic goals keeping their eye to the user's satisfaction. Although national libraries differ more than any other libraries among each other, they have the privilege and the authority to line a national strategy as usually they play a leading role in linking processes.

The last two years National Library of Greece, under the initiative of the new Director, Dr. Zahos, having as a mission statement the modernisation and the radical improvement of the crucial services factor, is performing a strategic planning, giving great importance to the contribution of electronic services. During 2003, services were provided to 16,850 readers and approximately 34,060 book and magazine titles were used by them.

Beyond the economic limitations, a vision for a dynamic entrance to the E-services époque can be realised. An implementation of quality collaborative E-services can function as a renaissance of objectives and motives. Undoubtedly, the need for certain new services, as E-reference and E-learning, is in combination with the satisfaction of their users' needs;

only an interactive and collaborative framework can effectively assure this. The National Library of Greece, with all the other academic library sources, will serve as a national coordinator of enduring knowledge accessible to all, contributing to the cultural, social and economic advancement of Greece, by defining the organisational schedule, ranging the sequence of the ready to answer academic partners, dealing with the right method of the personnel training for the virtual user and all this in the base of respecting the particularities of the Greek reality. The bringing together of libraries with a growing organisational interoperability is the wind of noticeable organisational change in existing Greek service structures demonstrating highly innovative service solutions.

National Library of Greece can have a manager role in organising a special, properly adjusted to the Greek librarian reality, schedule where there will be information diffusion by establishing a national consortium, adopting virtual solutions and playing the role of E-teacher, of an E-guider to the librarians of the academic, the public, the school library, a museum's library, a gallery's library. Even though it sounds quite ambitious, a good start can be made with the academic libraries, which harmonise well with the technological evolutions and plus there are successful academic consortial approaches to digital services, especially to E-reference at an international level.

National libraries need to raise awareness of their role as implementers of national collaborative frameworks, as protagonists in the driving of the "E-services car". National Library of Greece has a long tradition of assisting users to find information using traditional services. Also the last two years has E-mail communication with its customers and uses Web forms. The customer submits an E-mail query to which the librarian supplies an answer within a timeframe. The first step for the transformation has been done; an experimental "Ask a Librarian" link is on its Website that will be very soon approachable on the World Wide Web. What we design as a schedule is an expansion of the service in a national level joining forces to provide E-reference to the patrons and E-learning to the librarians from the libraries that will be involved in. The national librarian is a facilitator in the learning experience. He is the human contact centre queuing and routing queries to the next available service point and all this in an interactive procedure.

In Section 3 we examine the two basic parameters of the E-services (Staff and Management), we explain why only the Web is not enough for providing electronic information and the new role the national libraries are able to play as E-educators, responding to the users-librarians' needs.

3 Parameters

- **Staffing:** Staff needs to have clear guidelines about the appropriate type and the time of answering or forwarding the queries to librarian specialists within the network. Mainly the staff of the national library is the one who will have the responsibility to operate the whole effort guaranteeing the flexibility in the work arrangements. Facing the new challenges, in collaboration with the librarians of the academic libraries can deal with the factors that impinge on the easy, reliable, quick, interactive and trustworthy granting of E-reference.
- **Management - Administration:** The effective management of the service demands simultaneously the centralisation and the wide dispersal of jurisdictions. For the national library to be the “first among equals” is the key for a new, upper qualified, in a national prospective, role; to be the “national guide administrator” of all, undistinguished, the other libraries of the nation in the field of E-services. Even though there is a heterogeneity among them, national library, being the keeper of all the collections material, can turn on the light for a new collaboration where the factor of interaction and successful on time satisfaction of the patrons demands are the priority.

3.1 From the Users' View

The users' expectation is increasingly for digital services 24 hours a day. So, in order to address this demand, libraries are moved to cooperative projects. Some of the most important are the following:

- The Library of Congress Collaborative Digital Reference(CDRS)
- The 24/7 Reference Project
- AskUsQuestions.com
- The Virtual Reference Desk(VRD)
- The Internet Public Library

All of them strive to “advance the provision of digital reference and the successful creation and operation of human-mediated, Internet-based information services”. This enables the librarian the patron to interact, share and control the information queries remotely; it is the E-share in the information hunting. From that point of view, the librarian of the national

library can be the Request Manager of the queries posed by the librarians and are relevant to the questions they deliver from the users. He can process and database tracks to the appropriate addressee-library where the specialist librarian will answer. On a login screen the librarians act and interact assuring the reliability of the answers and the strength of the live human contact. The questions and answers are later archived to serve as a resource to the national network.

Moreover adopting a national theory to the E-services issue, that limits the chaos of the different approaches and the economic cost of the various projects which often “one does not recognise the other”. The transformation will be really amazing if we utilise the geographic and thematic diversity of libraries under the umbrella of a national body, as it is the National Library. As it concerns the technical issues, information science is and will always be willing to provide the best solutions for a shareware distributed request tracking system. The point is the organisational schedule and the role of the national library in it. A title like “E-Share Nation’s Libraries” may give the stigma eagerness of the proposal.

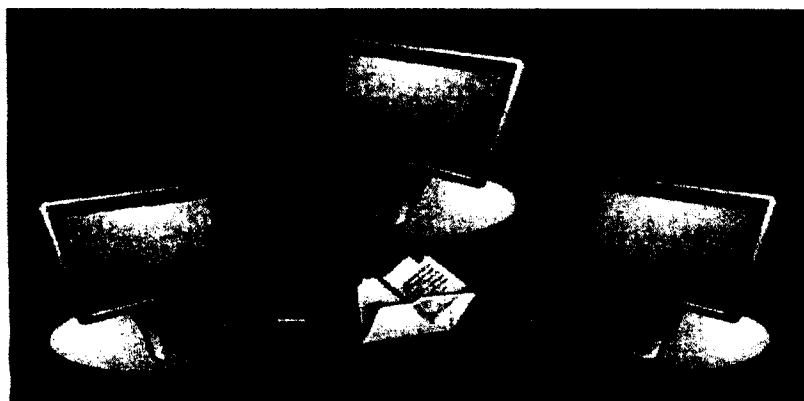
3.2 Why the Web-search Tools are Not Sufficient

As library use decreases and with more and more information found online on the Web, will we still need reference, even E-reference librarians? A search of the World Wide Web will turn up only the online information. Instead of that, certainly a National Library or every other library has sources more accurate and reliable. Especially a library-to-library services operation with reference experts submitting patrons’ questions online guarantees more the thorough tracking of the existing material and removes the danger of many times “dull” Websites with strange scopes and motives.

Steven Bell, Director of the library at Philadelphia University, says “librarians need to know much more than just mainstream librarianship to maintain their professional vitality” and we would like to add that librarians need to practise librarianship for their country’s and their nation’s good, feeling technology as a good means for teaching people and learning by their collaborators. Really is the Internet always everything? It may catch the moment, the year, the decade but surely without the librarian’s collaboration it can’t give birth to everything. That’s why and most of E-reference projects named “Ask a Librarian”. The Internet itself does not go where the information is and research is a multi-library process. Information can be true and still wrong. Only a comprehensive investigation can be objective.

3.3 Can a National Library Become an E-educator?

In the past few years radical improvements have been made in educational technology and distance education has taken up a lot of space, creating online classes, setting up virtual study groups and generally doing more or less anything we have experienced in traditional classrooms. It is really noticeable that in 2001 one of the pre-conferences in this year's Association of College and Research Libraries Conference had to do with "Teaching and Learning in 3-D Environments". In 1998 the same Association promoted the philosophy that "distance patrons are entitled to library services and resources equivalent to those provided in traditional campus settings". Today there is a big question on how tools, like the videoconferencing, that allow us to hold classes online, are really easily adaptable for one-on-one reference use where you could have many people in line and it would be difficult to figure out who came next. Now imagine a schema where patrons are the librarians themselves and the "course's theme" is how to provide in real-time accurate, comprehensive and reliable information to the users in the type of instantaneous response and immediate gratification. The conductors could be the specialist librarians of the National Library having all the qualifications to function as "E-educators" in the field of the E-reference itself. This can be done in an interactive framework with a wide variety of tools through contact centre software designed expressly for covering that need. VoIP (Voice over Internet Protocol), which allow the librarian and the patron – in our case is the librarian himself – to hold a voice conversation on the same line they are using for the Web connection– can be used as a method enabling talking back and forth at the same time, just as if they were on the phone. In any case technology offers functional tools.



The point is how we, the National Libraries, can use those developing new models and implementing distance-electronic learning in what we most care about, the E-training of the reference librarians. The important thing is not only to replace the crew of the sitting at the buildings desks reference librarians by online voice-message shippers, but how we can create a national, well qualified E-staff that can handle the reference traffic appropriately. A librarian of the National Library will be always there guiding them in online simulations, preparing to cope with specialised needs librarians as “patrons-students” have. Practically that can be realised with the asynchronous (time-lagged) and synchronous (real-time) and the ramifications of the two types of interacting on the E-instructor and the E-student.

This is of the utmost importance for librarians who need a quick introduction or for those who are not intimately involved with distance librarianship but will find themselves in the position of providing services to distance patrons. Librarians are teaching more and their patrons are demanding more instruction from their questions. Our role as instructors promises only to get bigger not only because the electronic environment continues to expand, but mostly because of the mission and the leading role the national libraries have to carry out. The challenge is in front of us! Let's organise our navigation platform!

4 The Role of the National Libraries in the Social Interaction

We give emphasis to the benefits of the librarians' social interaction and we propose directions for upgrading the E-services.

Librarians need to know what to know. They also need to have the help of other librarians. Interaction can question and tailor answers. As access to material becomes easier, emphasis will shift from the mechanical aspects to knowing what material to access. National libraries have an important socialising function to deal with. They can have a decisive role in creating mechanisms for seeking “the invisible information”, the one that is not yet digitally indexed, it is originated from rare booklets or often it is in the exclusive occupation of the national library of their country or of a collector who accepts to trust his valuable and unique acquisition only in the hands of the National Library, as it is supposed to be and it has to be the national keeper of the written cultural creation.

We can't overlook the ad hoc and contextual nature of most information seeking, the personal desirability from social interaction and the benefits the librarian community will enjoy if we put into practice the possibility

the users-librarians collectively and interactively seek information methods and environments inside a collaborative frame where librarians, with the instructive active presence of the National Library, find, create and maintain knowledge. Providing electronic services, we do not try to abolish the social world.

National Libraries can build the social functionality among the librarians of their nation, reminding that E-services are services where professionals-librarians are involved seeking for flexible, accurate, distributed construction for interactive communications. It would be so useful to focus on in-person reference transactions. We can create a shared folder that could be accessed by all desk staff during their shifts at the off-site services desk, with the immediate feedback available as a specialist librarian will be a standby for guidance. An idea could be to set up an appointment system to indicate when a librarian needs help by simply clicking the "National Reference" icon. The librarian of the National Library can guide him to the appropriate academic or other contributor and the two librarians can talk to each other on the phone or by chatting. In this way, social interaction is reinforced.

4.1 Directions

- Gathering statistics in order to assign responsibility to a specific librarian, automatically track and record response time.
- Interactive corporate updates – Policies and Procedures.
- Explore ways to help reference librarians share their online successes.
- Form an organisational schedule, having as a centre the National Library, where a "hearing" database will gather librarians' comments when learning from each other's best practices.
- Create a Knowledge Frequently Asked Questions Database for questions posing not by the users, but by the librarians-patrons. The Administrator of this database will receive notification every time a guideline answer is ready by the librarian of the National Library.
- Especially, as it concerns the Greek librarian community, the experts librarians are few and they more or less know each other. So, experts will be permitted to log in the system but will be allowed the full range of administrative permissions. But when there are

many queries from the librarians in the queue to be answered, it is an administrator's subject area to regulate the row. Apart from the outside the national library experts, a similar type would be in force and for the inside the national library other librarians, contributing, in this way, to the personnel's training but mainly cultivating the social interaction, we talked about before.

- The national library has to play the vital role of the mentor in ensuring the follow-up of the communication links and encouraging discussion for the best practices for E-reference and E-learning.

5 Conclusion

As Gwynneth Evans, Director General of National and International Programmes, National Library of Canada underlined: "It is evident that national libraries in all parts of the world play an important role in the economic, social, intellectual and cultural life of their societies. The library community is increasingly aware that its members must influence the public agenda". Today the national library is still searching for a permanent and comfortable position that is nimble enough to be flexible, accessible and continually up-to-date honouring its national mission.

In this sense, there is a need to highlight its expertise, abilities and irreplaceable resources in order to take a leading role in the E-services management environment. Of strategic importance to this effort is the understanding and development of service convergence. The challenge of establishing relevant training is not new to librarians and there is now the possibility of embedding training support within the learning management system as a part of the learning activity. National libraries are called to provide not only leadership, but also timely input to the development of appropriately developed services. They need to reposition themselves to be viewed by the community that they serve as managers and overseers of the repository space, promising quick, flexible, stable and comprehensive access to information.

The two key words, collaboration and interactivity, push them to provide a new "work frame" for their nation's librarians to work and learn with each other. They are the ones that can become a viable and productive community player invigorating, the social interaction. There are no one for addressing this complex issue, but opportunities exist for the national library within collaborative frameworks to contribute to the building of infrastructure for management. That will have a significant impact on the future direction of information and knowledge. There is a challenge in front

of us to transform current practices and may be through joint pilot projects strengthen the national library's central role in navigating the sources and supporting the E-époque.

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Groenlandica : Past, Present and Future

Erika Nielsen Baadh*

1 Introduction

Groenlandica is the name of the National Library of Greenland. This paper outlines the history of the library system of Greenland and gives a presentation of Groenlandica. Groenlandica participates in Nordic programmes to improve access to important sources of information. Finally, the paper reports on the plans to establish a new centre for education, research and documentation, Ilimmarfik, where Groenlandica will be merged.

2 Literary History

The Greenlanders have had access to books in Greenlandic for more than 200 years. Between 1790 and 1850 local missionaries in Greenland received more than 16,000 books, mostly religious, to be distributed free of charge among a population of about 3,000 people. Most West-Greenlanders were literate in Greenlandic as early as 1860.

With the standardisation of Greenlandic orthography in the 1850s by Samuel Kleinschmidt (a Moravian missionary, linguist and much more), and with the publishing of the newspaper *Atuagagdliutit* from 1861, Greenlanders gained access to non-religious literature and began to express themselves publicly in writing. *Atuagagdliutit* is a treasure, as cultural and printing history. The first colour illustration in a newspaper was published in *Atuagagdliutit* in 1861, a woodcut showing the American navy visiting Nuuk.

3 Library History

The first plans for libraries in Greenland were outlined as early as the 18th century. These libraries were reserved for the Danish colonists and the few Greenlanders who mastered the Danish language. In the first half of the 19th century missionaries established small collections for the local population. Nunatta Atuagaateqarfia (The Public and National Library of Greenland) was founded in 1925, but the first library legislation came in

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1956. One of the first Parliament Orders resolved by the new Home Rule Government in 1979 was for the library system. With this order Greenland took over the responsibility for the library system and for the preservation and registration of material published in Greenland.

4 The History of Groenlandica

As a result of the first library legislation in Greenland in 1956, the first qualified librarian, Hans Westerman, was employed. Hans Westerman was in charge of the creation of the present Greenlandic library system in the 1950s and also in reforms after the establishing of Home Rule in 1979.

Westerman started the Groenlandica-collection in the 1950s, primarily as a museum for the old and valuable Greenlandic publications and manuscripts. In 1968 a fire ruined most of the collection, but fortunately the manuscripts of Samuel Kleinschmidt were rescued. Through gifts and purchases from second-hand bookshops and auctions all over the world we have succeeded in replacing almost everything. There are still holes in the collection, but we have a large collection of unregistered material which may fill them. In 1976 the library moved into the present premises which is now much too small.

5 Objective

The objective of Groenlandica is to establish a national and a foreign collection. The national collection consists primarily of material acquired according to parliament order on legal deposit. Books, newspapers, magazines and other printed material illustrate the material and spiritual development in Greenland. The foreign collection consists of books and other material about Greenland, Inuit, the Arctic and other subjects of importance for the Greenlandic society.

6 Groenlandica Today

Groenlandica is today a department of Nunatta Atuagaateqarfia and acts as the National Library. Groenlandica administers preservation and registration of the legal deposit, manuscripts and other material of national interest and purchases and registers the foreign collection. Besides, Groenlandica is responsible for the Greenlandic national bibliography and for answering domestic and foreign inquiries.

Nunatta Atuagaateqarfia's roles as national library, central library for Greenland and public library for Nuuk give a very broad user group from leisure time readers to students, national and international researchers. Groenlandica mostly services researchers and students.

The collections of Groenlandica and of the public library are registered in the same database (www.katak.gl or www.groenlandica.gl). Groenlandica does not have its own reading room, and patrons have to share the reading room with users of the public library. The staff of Groenlandica is 1 head of department, 1 librarian, 1 technical assistant and 1 unskilled employee. In addition to the shared areas, Groenlandica has 350 m² stack room and office. The entire collection is placed on closed shelves, the national and special collections in a fireproof room.

The special collection consists of several smaller collections, among others the rescued collection of Samuel Kleinschmidt's notes, Greenlandic writers' manuscripts and books, collections of audiovisual materials, and a collection of non-Greenlandic books since 1870.

According to the Legal Deposit Act, 3 copies must be deposited, and Groenlandica buys a 4th copy for lending. Due to the increasing publishing activity in Greenland together with increasing awareness of the legal deposit rules, the collection is growing rapidly and space has become a major problem.

As of January 1, 2004 a total of 69,071 materials are registered in the database, including the 10,500 of the National Collection. Most of the periodicals and the special collection are not yet registered in the database.

7 The Database

Nunatta Atuagaateqarfia started computer registration and lending in 1993. The first to be registered was the public library collection and next those Groenlandica books already catalogued in the database. The rest of the collections are registered gradually in stages. The national and foreign collections were done in 1997.

In 2001 three external educational institutions started to register their collections in the database and hopefully the university will soon be able to do the same.

8 Projects

Apart from the day-to-day work, Groenlandica has different projects. A lot of time is used for relocating material because of lack of space and cataloguing unsorted material piled up through the years. In three years we have spent DKK 100,000 on binding periodicals. Groenlandica also takes part in external projects, e.g. the Centre for Knowledge of Children and Young People, two digitising projects and Ilimmarfik, the centre for research and education (see below).

9 Centre for Knowledge of Children and Young People

In the fall of 2001 the parliament decided to establish a documentation centre about the conditions of children and young people in Greenland, a *Centre for Knowledge of Children and Young People* (www.nanoq.gl/mipi). Groenlandica serves in the affiliated committee. Presently the centre is placed in the Ministry of Social Affairs and Labour, but it is supposed to be a part of the coming campus Ilimmarfik where collections of the centre will be included in Groenlandica.

10 Digitising Projects

VESTNORD is a digital library where thousands of pages in digital format are made available on the Internet. This gives access to the printed heritage that is preserved in the newspapers and periodicals of the Faroe Islands, Greenland and Iceland. The access is open to everyone and the material is made available by using the latest methods in information technology. This material is produced with state of the art information technology. Access is open to everyone. The goal is to enhance access to printed newspapers and periodical for the general public and researchers. Users can gain search the database with several different methods, e.g. by titles and countries. They can also browse through the material and print selected pages. The digital library will steadily accumulate more titles from the participating countries.

In total 300,000 pages of newspapers and periodicals from 1773 to 2001 will be made available on the Internet through this project. A list of all the material can be found on the VESTNORD search page. As soon as a title has been digitised you can browse through it.

VESTNORD is a collaborative project between the National Library of the Faroe Islands, National and Public Library of Greenland and National and University Library of Iceland.

In the project *Vestnord* Groenlandica digitises the Greenland code of statutes, *Nalunaerutit*, 1905-1952, the magazines *Sujumut* 1933-1948, *Avangnamiok* 1913-1948, and *Atugagdliutit* 1861-1999 are under process. You can see the results of the project in www.aviisitoqqat.gl or www.timarit.bok.hi.is

11 Ilimmarfik

As you have heard both Groenlandica and the university have far too little space. A situation we share with several other institutions in Nuuk.

The idea of building a campus big enough for several research institutions started at a conference on advanced studies in 1993. In 1996 four institutions with serious space problems sent a proposal to the Home Rule Government of building a house for them on the site next to the newly built Greenland Institute of Natural Resources and they called the place *Ilimmarfik*. Ilimmarfik is the word for a place where knowledge is produced or where the spirit can travel.

Today eight research and educational institutions are involved in the planning for Ilimmarfik: University of Greenland, School of Social Work, School of Journalism, Institute of Education, Groenlandica, The National Archive, Statistics Greenland and the Language Secretariat.

The objective of Ilimmarfik is to create an up-to-date framework for academic training, for research and for safekeeping and wider accessibility of Greenland's cultural treasures. An architectural competition was held in 1999 and the winning prize was given to KHR A/S in cooperation with Tegnestuen Nuuk. Further planning is carried out by an interim direction consisting of the leaders of the participating institutions in cooperation with the Ministry of Culture, Education Research and Church.

In Ilimmarfik, Groenlandica will be merged with the libraries of the other participating institutions into a National Research Library and will give access to a unique fund of knowledge, which today is invisible on closed shelves or in some cases in libraries without librarians.

The combined library will be part of the study and research environment and an information centre for the whole of Greenland and for the rest of the world. Optimistically, by then all the collections are registered in the national database.

Today librarians who are trained as in public libraries perform the library service for the academic world in Greenland. In Ilimmarfik it will be an improvement to be able to consult subject specialists to secure the quality of the selection of material, key words, etc.

The National Research Library in Ilimmarfik will hopefully help to make education and research a tempting occupation for the Greenlandic youth, so that Greenland in the future will get researchers with a knowledge of the language, the culture, the society and the nature.

The plans now include a library situated in a two-storey building, close to the reception, the archive and the canteen with 515 m² open library,

including reading rooms and circulation desk, 139 m² fireproof room, 131 m² offices and processing department, a total of 785 m². The reading rooms will also be used by visitors to the National Archive, which will be housed in the same building.

But even though considerable work and money has been put into the Ilimmarfik project, the parliament and the government have not yet granted the necessary funding for the project. The budget for Ilimmarfik is DKK 159 mio. of which it is hoped to get DKK 60 mio. from various foundations. The latest report says that the building process will start no sooner than 2005, so we will have to put up with our small spaces for a few more years.

Services of the National Diet Library of Japan: Present State and Future Direction

Masashi Murakami*

1 Introduction

The National Diet Library of Japan, the NDL in short, belongs to the Japanese national parliament, which we call the “National Diet.” We assist Diet members in the performance of their duties, as well as providing library services for the executive and judicial agencies and the general public. The National Diet Library was established in 1948, 56 years ago. In 2002, the Kansai-kan of the National Diet Library, a new facility of the NDL located in Kyoto, was opened. The International Library of Children’s Literature, a branch library of the National Diet Library, also started full services in the same year. Since then, the collections and functions of the NDL have been divided among three facilities: the Tokyo Main Library and the two others mentioned above. To make them operate in an integrated manner and underpin the enhanced services, we have long been developing a new infrastructure. Facilities, systems, organisation, and workflows have all been changed. In 2002, we reached a milestone, and in light of the achievements so far, we are looking to further expansion of functions and services.

The basic policies of user services are as follows:

- (1) To improve user-friendliness and assure equal access.
- (2) To meet users’ information needs promptly and effectively
- (3) To simplify the procedures and enhance public relations activities
- (4) To maintain the consistency of services provided in three facilities

In the following part of my paper, I will explain how those policies were put into practice and how our services were improved.

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2 New Libraries

Let me begin by introducing two new facilities of the NDL, the Kansai-kan and the International Library of Children's Literature. After that, I will talk about our digital library projects.

2.1 Kansai-kan

The Kansai-kan is located in Kyoto prefecture, about 500 kms West of Tokyo. The idea of this new facility dates back to 1982, when the Research Committee for the Kansai Project of the NDL was established. In 1987, the Committee submitted a report which recommended the establishment of a new facility in Kansai Science City, Kyoto. We completed basic plans and requested the budget. An international design competition for the Kansai-kan building was held in 1995, and in 1998 the construction started. The building was completed in March 2002 and opened to the public in October of the same year. The project took 20 years to be completed.

There were three objectives in building the Kansai-kan: to secure an additional long-term storage space with an adequate capacity, to supply library services in a highly-advanced information society, and to establish a large-scale information resource centre in the Kansai area.

The building has four floors above ground and four floors below ground. Reading rooms are located in a large hall on the first basement, which is 100m long from east to west and 45m wide from south to north. The eastern two thirds of this room are occupied by the General Collections Room, and the rest is used for the Asian Resources Room. About 150,000 volumes of books can be stored on open shelves and 350 seats are available, including 170 seats equipped with PC terminals for searching and requesting. There are also the seats for CD-ROM or electronic journal users. Other underground floors are occupied by the stacks. It has a capacity of 6 million volumes now, and will be expanded to store 20 million volumes in future.

2.2 International Library of Children's Literature

The International Library of Children's Literature, the ILCL in short, is the first national library of its kind in Japan. It started operations when it partially opened in 2000. It is located in Ueno, Tokyo, 5 kms northeast of the Tokyo Main Library in Nagata-cho. The Renaissance-style building of the former Imperial Library, which was built in 1906, was renovated to house the ILCL, preserving the old design and adding new spaces.

Guided by the principle, "Children's books link the world and open up the future," the ILCL is making every effort to offer a good environment

for children to read and for researchers to search materials and obtain information, working together with other related institutions inside and outside Japan.

It holds 300,000 volumes of children's books and related materials and publishes the Union Catalogue Database of Children's Literature. Seven thousand books are on open shelves in the reading rooms called "Children's Library" and "Meet the World." Public events such as exhibitions and workshops are held. To help children to deepen their understanding of foreign countries, the Book Sets Lending Service to school libraries was started. (Each set contains about 40 books on one specific country or area and is lent to a school library for one month.)

2.3 Digital Library

The digital library is a virtual library which has no physical site. It collectively means all the NDL services provided online. Several divisions are involved in its operation. The Digital Information Planning Office of the Tokyo Main Library is in charge of major planning and coordinating, while the Digital Library Division of the Kansai-kan takes care of providing services, making the contents, developing and operating the systems, and conducting research and development.

In 1994, we launched the pilot electronic library project. In this project, we worked on constructing the national union catalogue network and conducted practical experiments. After ironing out technical and institutional problems, the "Basic implementation plan for electronic library services" was drawn up in 2000. We started digitising our collections and examining issues concerning online information resources. I will later overview the digital library services we are now providing.

3 Improving On-site Library Services

One of the reasons we constructed the Kansai-kan is the shortage of storage spaces in the Tokyo Main Library. Before the Kansai-kan was opened to the public, we transferred huge amounts of library materials including western periodicals, materials on science and technology, and doctoral dissertations from Tokyo to Kansai. As a result of this separation, residents of the Kansai region now have a contact site where they can use the collections of the NDL.

For smooth and efficient user services, we developed an integrated system merging all user information and installed it in the Kansai-kan. From

the user card issued at the entrance, we can trace the user's entrance, searching on the OPAC, requests for retrieval and copying, payment of copying fee, and exit. Additionally, we started user registration, which enables registered users to enter the library with reduced procedures and to request photocopies from outside the library. At the Kansai-kan, users request materials in the closed stacks through computer terminals. In order to assist people who are not used to computers, we allocate staff to help them search materials and make requests through computers in the reading rooms.

Users in Tokyo complained about the transfer to the Kansai-kan of western periodicals, materials on science and technology, and materials related to Asia. Users in the Kansai, on the other hand, have realised that the materials in the Kansai-kan are not complete, and are learning to request materials in the Tokyo Main Library. At present, we provide inter-site loan service between Tokyo and Kansai to complement the materials not held at either library. Many Kansai-kan users want to read Japanese periodicals held in the Tokyo Main Library, but they are not available by inter-site loan service. This is something that we expect the Tokyo Main Library to reconsider.

4 Collecting, Providing and Preserving Digital Information

4.1 Digitisation of Collection and its Use

In October 2002, we made "Digital Library from the Meiji Era" available to the public via our Website. Original texts in an image format from 47,000 books out of 170,000 books published in the Meiji era (1868-1912) can be viewed in digital form on the Internet. We plan to digitise publications of the Taisho era (1912-1926) and the beginning of the Showa era (1926-1945). However, since the copyrights of many authors in this period have not expired, we will need to spend much time and effort on copyright clearance. Our digital library also provides "Rare Books Image Database" and "The Digital Library of Children's Literature." "Rare Books Image Database" contains image data of collections designated as Important Cultural Properties and multicoloured woodblock prints from the NDL holdings, and "The Digital Library of Children's Literature" shows digital images of children's books published before 1950.

4.2 Full-text Database System for the Minutes of the Diet

The Research and Legislative Reference Bureau operates a full-text database system for the minutes of the National Diet. It covers the original

text of all the proceedings from the first session held in 1947. We are planning retrospective conversion of the proceedings of the Imperial Diet from 1946 onwards.

4.3 Collecting and Preserving Information Resources

The Web Archiving Project (WARP) is an experimental project to collect and preserve useful information resources on the Internet in Japan as cultural property for future generations. In collecting and preserving such information, we make an agreement with the author about the right of reproduction and public transmission. Currently, we collect 85 titles of Websites, most of which are of government agencies, local governments and cultural exchange events. Collecting Websites periodically is technically difficult and cost consuming, but I think it is the responsibility of the NDL to pursue this possibility.

We are now doing research on the preservation of digital information. In particular, we examine the area to be covered, the methods, technology trends and environment of preservation. This field of study, including technical problems of both hardware and software, will become more and more important for the NDL, considering our responsibility to preserve library materials.

4.4 Digital Information and Legal Deposit System

In order to collect information resources on the Internet and provide them for use, we need to establish institutional frameworks. The NDL has been trying to determine whether online publications can be included in the legal deposit system, and, if they can, how they should be deposited and how far the scope of deposit would be. As more and more online publications are issued without physical medium and disappear with the course of time, the NDL has begun to be expected to undertake the role of preserving and accumulating such publications over the long term. This matter is being examined in a subcommittee of the Legal Deposit System Council, an advisory panel of outside experts to the Librarian of the NDL.

5 Expanding People's Access to Library Services

In the days when communications and electronics technologies were still under development, the NDL was in practice only accessible for people in the Tokyo metropolitan area. As a national library, the NDL has long been urged to guarantee fairness of access to the library, and the establishment of a digital library lets us get closer to the ideal.

5.1 Expanded Functionality of OPAC

In October 2002, “National Diet Library Online Public Access Catalogue (NDL-OPAC)” was made accessible to the public. Using this OPAC, people can check the location and status information of materials as well as search bibliographic data. They can also request retrieval and photocopy via the screen. Moreover, the bibliographic databases installed in the OPAC are larger in number and wider in scope. The total data are more than 10 million, including 3 million Japanese books published from 1868 and 5.7 million data of the Japanese Periodicals Index. The Japanese Periodicals Index has gained a favourable reputation among the users who had long been waiting for it to come out. It is recognised as an innovative service provided by the NDL.

5.2 Document Supply Services

The Collections Department of the Kansai-kan provides services for remote users. As users can request copying much more easily now, the requests have doubled compared with the same time last year, and will go on increasing. Most interlibrary loan requests are for Japanese books, but the Kansai-kan has very few Japanese books, and only 10 per cent of the requests can be fulfilled at the Kansai-kan. The rest is taken care of by the Tokyo Main Library. As one of the Kansai-kan’s main functions is document supply, I think we need to turn things around.

6 Document Search Assistance

It requires some technical skill and experience to use a library such as the National Diet Library, whose collection has a complex structure and a long history. Today, a beginner user who tries to find something from the information resources on the Internet would be at a loss when confronted with its vastness and complexity. Thus started our digitally-based search assistance services for users.

In October 2002, the NDL expanded its Website to improve the library’s information provision and user guidance. The following new contents became available: *Research Guide by Subject* introduces basic materials and reference tools for specific subjects or collections and provides links to related institutions. *Introduction to Reference Books* provides information on domestic reference books along with explanatory notes. Subject catalogues such as *Books on Japan* and *Directory of Japanese Scientific Periodicals* facilitate the user’s search for materials.

We also started a new project named "Database Navigation Service" (Dnavi for short) to navigate users searching for specific information by providing links to external databases on the Internet. With Dnavi, users can search databases on the Web by title, creator, classification, and description. As of April 2004, it contains more than 6,000 databases. Specifically, it offers information on the databases of museums, local assemblies' minutes, local government ordinances, and others. This project has been also carried out on a trial base like the WARP, which I have already talked about.

The Collaborative Reference Database Project aims at enhancing the value of libraries and sharing their reference information by creating a database of reference inquiries and providing it to librarians and users. About 150 libraries responded to the NDL's call for participation. The system is currently under development. We will start test operation in fiscal year 2004 and then make it available via the Internet to public users.

7 NDL and Asia

7.1 Asian Resources Room

Since its foundation in 1948 to the present, the NDL has had a room specialising in Asian materials. With the opening of the Kansai-kan, we transferred the base of our Asian information service from Tokyo to the Kansai and opened the Asian Resources Room in the Kansai-kan with the purpose of developing the service further. This Room deals with materials and information related to East Asia, Southeast Asia, South Asia, Central Asia, Middle East and North Africa. It holds 120,000 volumes of books and 7,000 titles of periodicals, among which 75 per cent are Chinese materials and 15 per cent are Korean. Materials in other languages make up only about 10 per cent. To improve those weak collections and collect materials systematically from FY2002, we are planning to make research trips to Vietnam, Indonesia, Thailand and other countries to research the situation of publications in the area.

We also operate the NDL Asian Language Materials OPAC to offer bibliographic information of materials in Asian languages. This is another new service that started in 2002. Currently, it contains bibliographic data of 50,000 books and 6,000 periodicals.

The Asian Resources Room is trying to enrich Asian information in Japan and promote its distribution, looking for possibilities of collaborative work by holding meetings with related institutions. In addition, we are actively carrying out cooperative and supportive programmes such as a

training programme on Asian information for the staff of related institutions in Japan.

7.2 International Exchanges with Other Libraries

The NDL has carried out mutual visit programmes regularly with the National Library of China and the National Library of Korea. We also started the same kind of programme with the National Assembly Library of Korea last year. “Strengthening Functions of National Libraries” and “Overview of the Present Status of the National Libraries of Korea and Japan: Digital Library Construction” were the main themes of last year’s programmes with China and Korea. In November 2003, we held an international symposium titled “The New Horizon of Library Services: Towards the Better Understanding of Asia” in the Kansai-kan. The keynote speaker was Mr. R. Ramachandran, Secretary General of CONSAL. Thanks to him and other guest speakers such as Ms. Amelia McKenzie of the National Library of Australia and Mr. Hwa-Wei Lee from the Library of Congress, the symposium was fruitful.

Other than those, the NDL has been functioning as the IFLA/PAC Regional Centre for Asia since 1989, promoting preservation activities in Asia.

Recently, Japanese libraries are developing close relationships with Asian libraries through regular exchange programmes and international seminars. The NDL is expected to play a prominent role in this trend. We believe that we should build further relations with libraries in Asia to deepen mutual understanding between Japan and Asian countries.

8 Conclusion

I have outlined how we have expanded the functions of the NDL and improved its services in consequence.

Finally, I would like to make several points about our future direction.

With the rapid development of the Internet, the ways of producing, distributing, accumulating and providing information in our society are radically changing. Considering the circumstances, four priority areas are indicated in the Vision of the National Diet Library, which we are currently developing, with intent to enhance the transmission of information and the library services. The four priorities are: enhancement of legislative support activities, construction of a digital archive, improvement of access to information resources, and promotion of cooperative projects.

Currently in Japan, digitisation of the collections of museums and libraries and their archiving are in progress under the Japanese government's e-Japan Priority Policy Programme. The NDL is expected to fulfil the central role in the construction of a digital archive and information provision in Japan. Against that background, the NDL is drawing up the Medium-term Digital Library Plan to indicate the concrete direction of its digital library services and the framework necessary for their realisation.

The NDL has made achievements in what could not be done alone. By working with various libraries, by collaborative activities with domestic institutions and in cooperation with foreign libraries, we have opened up new possibilities. I believe that international cooperation will become more and more important in the future in order to develop our functions as a national library.

I hope that taking opportunities like this conference, librarians and other colleagues in various countries will share common awareness of the issues, strengthen their connection, deepen mutual understanding, and solve the common issues together.

Preservation and Conservation of Library Resources with Special Reference to the National Library of Malaysia

Mohd Din Bin Ahmad*

1 Introduction

One of the major crises facing national libraries throughout the world is that the rate of deterioration of their collections far exceeds the capacity and effectiveness of preservation activities. Generally a national library's collection contains a wide range of organic materials including paper, cloth, animal skins and adhesives, which undergoes a continual natural ageing processes. With these inevitable process of deterioration, it is incumbent upon national libraries to preserve the nation's literacy heritage or intellectual output. Thus, most libraries especially those entrusted with legal deposits and manuscripts, have established their own preservation division to minimise the ageing process of their collections.

2 Establishment of the National Library and Legal Deposit

The National Library Service was first established in 1966 as a unit within the National Archives. The main function of the unit was to enforce the *Preservation of Books Act [Act 35], 1966*. Under this Act, publishers in Malaysia were required to deposit two copies of printed materials (books, magazines and newspapers) published in the country to the National Library Service Unit of the National Archives. In recognition of the role of a National Library the National Library Act was passed in 1972, establishing the National Library as a separate entity from the National Archives. The National Act was revised on 1987 and the National Library (Amendment) Act 1987 expanded the role of the National Library of Malaysia (NLM).

In 1986, the *Preservation of Books Act, 1966* was repealed and in its place, a new Act, the *Deposit of Library Materials Act [Act 331] 1986* was passed. Under the new Act, publishers in Malaysia are required to submit five copies of books and two copies of other printed library materials and two copies of non-print library materials to the National Library of Malaysia.

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The functions in Clause 3 (1) of the Act states:

For the purpose of this Act, there is hereby established a National Depository which shall be the National Library and which shall have the following objectives:

- (a) to provide for the conservation and use of library material published in Malaysia;*
- (b) to create standard bibliographic records of library material published in Malaysia;*
- (c) to maintain statistical records of library material published in Malaysia.*

The National Library (Amendment) Act [Act A667], 1987 defined that:

Library resources means any form of written, printed or graphic matter on or in which information is written, recorded stored, displayed or reproduced, including manuscripts, typescripts, books, newspapers, periodicals, pamphlets, maps, microforms, music sheets, photographs, cinematography, film, phonorecords, video and audio recordings and other recordings on paper, film or other materials and reproductions thereof;

In Clause 3 (a):

.....to make available for the use of present and future generations national collections of library resources...

The Act further defines conservation as:

.....various measures taken for the protection, preservation and necessary repair of library material and for their maintenance under conditions designed to prevent and retard their physical deterioration...

Further in Clause 6 of the same Act states:

The Director General may authorise the disposal of any library material delivered to him under the provisions of this Act, provided that wherever practical, a copy of the library material is conserved in original or other form.

3 Establishment of the Preservation Division

3.1 The Conservation and Reprography Unit of the National Library was first established with ten members of staff in 1979. Each member of staff received short training and practical attachment in the National

Archives in order to develop their skills in handling conservation and restoration work. This unit was upgraded to a Division in 1988. In 2002, under the restructuring of the National Library of Malaysia's organisational structure, the division was renamed the Preservation Division. The division is headed by a Deputy Director and has a librarian and a total staff strength of 22, mainly Conservators.

3.2 The Preservation Division is made up of five (5) units:

- (a) Manuscripts Unit
- (b) Printed Materials Unit
- (c) Binding Unit
- (d) Hot-Stamping Unit
- (e) Reprography

3.3 The Preservation Policy of the National Library of Malaysia is to provide a comprehensive statement on the preservation of the library's collections. The objectives of the Preservation Policy are:

- (a) To increase awareness of the importance of library preservation among the staff and ensure a rational use of resources.
- (b) Maintain adequate standard of care in regard to the storage, handling and display of library materials, to reduce the risk of accidental damage to the stock and to control the causes of deterioration.
- (c) To plan and coordinate the maintenance of the library's collection in a systematic manner. Priority should be given to the treatment of any material which is already at high risk due to chemical decay.

3.4 The conservation work of the National Library of Malaysia is guided by several basic principles, namely:

- i) The emphasis is on minimal repairs, in order to retain historical integrity of the library materials concerned.
- ii) Any bibliographical evidence should be preserved.
- iii) Proper documentation of all treatment undertaken on a particular manuscript for future reference.

3.5 Every organisation may or can experience a serious incident that prevents it from continuing normal operations. The incident can range from

a flood or fire to a serious computer malfunction. The financial cost of salvaging and replacing materials damaged in such incidents tends to be very high, but the cost to the organisations in terms of interruption to business and the cost to its users in wasted time and lost opportunities would be hard to calculate. According to ASLIB, disaster prevention is aimed:

...to protect the library from disaster by improving its standard operating procedures, and to reduce the risk of damage to the holdings to acceptable levels.

In the National Library of Malaysia Contingency Plan Policy (2001), two important factors are considered:

- i) The need to reduce the likelihood of disasters by recognising the threats and taking necessary preventive action, and
- ii) To ensure that the library is adequately prepared to deal with any effect of emergency causing damage to the holdings.

The Safety and Security Committee of the National Library of Malaysia is chaired by the Deputy Director-General with the Contingency Plan Committee as a subcommittee. The Contingency Plan Subcommittee Team is responsible for ensuring that contingency plans and procedures are in place to prevent and recover from any emergency situation that may have an adverse effect on the Library's Collection.

4 Preservation Activities

(a) Binding

Many of the Library's most heavily used materials are monographs and serials. The weak covers cannot offer adequate protection and the bindings cannot withstand intensive usage. Therefore, the emphasis in binding is on the use of high-quality materials and the application of stronger stitching techniques. However, most of the simple binding repair works are outsourced to private binders.

The unit is also involved in making pamphlets boxes and folders as storage materials. It must be emphasised that poor-quality storage materials can accelerate the deterioration of the library resources that it is intended to protect.

(b) Preservation of Malay Manuscripts

The Centre for Malay Manuscripts was established in 1985 as a new division of the National Library of Malaysia. Since its inception, it has

acquired more than 3,300 copies of Malay Manuscripts, the biggest Malay Manuscripts collection within an institution in the world. These manuscripts are fumigated before they are kept in the storage room, outsourced to a private company. The storage room is environmentally controlled with 24 hour air-conditioning facility. Most of the manuscripts are stored in acid free boxes while a few are bound.

The main technical activities of preservation are deacidification and repair works. For the repair process, two methods are used:

- (i) Tissue repair by using Japanese Kozo tissues and other Japanese hand-made papers.
- (ii) Leafcasting method is used when the sheets are still intact but have many holes. The process uses the Bodleian hand-made papers as fibres to fill up the holes of the sheets.

(c) Preservation of Media Resources

The National Library of Malaysia also collects non-printed library materials such as cinematograph films, microforms, phonorecords, video and audio recordings and other electronic media, mostly through legal deposit. As of September 2003, the media resources available in the library's collection stands at 99,135,000 items. The library media resources are shelved in the Audio Visual Collection with 24 hours air conditioning and controlled humidity (45-55 per cent) and temperature (15°C-21°C). Proper guidelines, procedures and standards have been undertaken for these collections.

(d) Microfilming Activities

A Subcommittee of Microform (SCOM) was set up in order to foster cooperation in microfilming Malaysian newspapers and serials among institutions that has microfilming equipment. Under the arrangement, the National Library of Malaysia is responsible to microfilm five newspapers. Malay manuscripts and rare books are also microfilmed.

Microfilming activity is an act of conservation to ensure that the original materials are preserved for future use. Master negative microfilm is produced as preservation copy for each title. Second generation negative microfilm allows the National Library of Malaysia to make copies for researchers. Archival films are used, 35 mm format for newspapers and manuscripts while 16 mm format for rare books. As at January 2004, the

microfilm collections (master negative type) stands at:

- | | |
|-----------------------|------|
| i) Newspapers | 3215 |
| ii) Malay Manuscripts | 1167 |
| iii) Rare books | 705 |

(e) Housekeeping Activities

To ensure the overall protection of the collections in the National Library, a regular programme of inspections are undertaken. Clean surroundings discourage mould, insects and pests. The environmental factors of temperature, relative humidity (RH), light and atmospheric conditions could cause degradation reactions. Monitoring is very important because it documents or records existing environmental conditions. The main purpose of the periodic inspection is to find early warnings of biological or chemical damage. The report of the inspections are discussed during the Security Committee meetings which are held bi-monthly

Relative humidity with 55-65 per cent RH can lessen or reduce mechanical damage by allowing materials to retain flexibility. A sustained RH above 65 per cent can cause adhesives in both modern and traditional library materials to soften and lose their strength. On the other hand, environment above 70 per cent RH would spur mould growth. A low RH (less than 40 per cent) reduces chemical change but can cause materials to shrink, stiffen, crack and become brittle.

(f) Preservation of Printed Materials

The main technical activities include deacidification and repair. The dry process of deacidification is the same as applied to the manuscripts. The wet process on the other hand, include using chemicals such as Magnesium Carbonate, distilled water and Carbon dioxide (CO₂ gas).

5 Extension Services

The Preservation Division also provides extension services such as advisory, training and exhibition services. Among the advisory services are to :

- i) Provide advice pertaining to the preservation and conservation of library materials to the local libraries.
- ii) Provide advice on the planning of library building on the aspect of preservation to the university libraries, special libraries and public libraries.

- iii) Provide advice to libraries with preservation and conservation problems.
- iv) Advise on the need for disaster preparedness plan for other libraries.
- v) Provide training programmes and short courses for library staff or individuals on preservation and conservation.
- vi) Conduct practical training to participants from overseas under the Malaysian Technical Cooperation Programme (MTCP), a yearly programme for Librarians and Library Assistants from developing countries.
- vii) Intensify efforts to promote awareness of library staff and the public in general on the importance of preservation. In 2003, a number of hands-on book binding demonstrations were conducted to create awareness among the public, including a week-long demonstration at the Kuala Lumpur International Book Fair in April 2003.

6 Future Plans

The Preservation Division of the National Library of Malaysia regularly upgrades its facilities and services to cater for the changing needs of types and formats of information for preservation.

(a) Innovation

The Preservation Division makes continuous efforts to improve preservation methods in the National Library of Malaysia, and has initiated innovations which are now and being used. In 2002, the Preservation Division has won one of the Civil Service Innovation Awards for its innovation on the leafcasting method for conservation of Malay manuscripts. The Preservation Division has experimented on ideas for changes on improving the preservation procedure so that it can reduce cost and materials. For example, for Malay Manuscripts shortening the procedure and cutting down on time wastage without compromising the quality of the preserved end product is one of the innovations which has been implemented.

(b) National Preservation Centre

The number of libraries in Malaysia has increased tremendously in recent years. The Preservation Division is the biggest and most well-equipped preservation service among the libraries in the country. With the

rapid increase of academic institutions and consequently development of academic libraries, the National Library aims to develop the Preservation Division as a National Preservation Centre in Malaysia. One of the objectives of the Centre is to organise more activities to raise awareness amongst librarians and the public on the importance of preservation. It will also provide training opportunities and advisory services to government and private sector institutions. The centre will also establish partnerships or collaboration with local and foreign universities.

(c) Multi-Media Preservation Unit

In the past, the emphasis of preservation has been on paper-based materials such as books, journals, newspapers, etc. However, in recent years, the volume of publications in non-print format, especially electronic publications such as CD, DVD and online publications have increased tremendously. To cater for this increasing need, the Preservation Division plans to set up a laboratory specialising in the preservation of digital publications.

7 Conclusion

The role of a national library as custodian of the nation's heritage requires a good preservation and conservation service. This role is becoming more challenging due to the increasing volume of publications in non-print format, especially those in electronic format. The National Library of Malaysia, is designated by legislation to provide leadership of the nation's libraries has also to play a leadership role in preservation and conservation of library materials. In this respect the National Library of Malaysia provides extension and advisory services to other libraries and institutions in Malaysia. A proposal to build a laboratory for the preservation and conservation of non-print materials, including electronic materials is also envisaged for the National Library under the Ninth Malaysia Plan (2006-2010).

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Legislation for National Library Services

Dasharath Thapa*

1 Introduction

Information is an essential part of a nation's resources and access to it is one of the basic human rights. The formulation and implementation of national information policy is the only way to ensure that everyone engaged in any activities can have access to the information they need. To update and sharpen the knowledge of the important human resources of any country, appropriate information services should be made available to the respective users. To make such services available easily without spending much time, the above-mentioned national policy should be formulated and such policy should be supported by the national law. The national law provides provision of information services as well as the control of national imprint as cultural heritage in the country.

2 What is a National Library?

The National Library did not enter history effectively until the beginning of the 18th century. Graham P. Cornish says that national libraries wishing to be successful should aim to become an agent for national identity, for national economic advance, and for international access.

Here in this paper we are mentioning the legal provision for the national libraries. We can not imagine an information services system without a national library. There are national libraries in many countries of the world but many of the national libraries are unable to perform national functions because of various factors — one of the factors is library law governing the national library. The national library established on mere administrative (cabinet) decisions cannot perform its both primary and secondary function in the absence of the national law. National libraries are run under the Presidential Decree in some countries, whereas some others do have Boards under a separate Act or Ordinance. The national libraries in some countries are governed by different Ministries such as Ministry of Education, Culture, Fine Arts, Science and Technology or Department of Interior. The

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mandatory functions of the national library are provisioned in such acts enacted by the legislation. Thus the legislation provides a more stable and dependable basis for the library's relationship with the state, and particularly for an adequate and reliable flow of funding.

According to UNESCO, national libraries are responsible for acquiring and conserving copies of all significant publications published in the country and functioning as a deposit library whether by law or under other arrangements. According to Peter J. Lor, national library service is an organisation, primarily funded by the state which is responsible for providing library services of one or more kinds to communities throughout the country through a network of branch or affiliated libraries and service points.

The majority of countries have national libraries and it is quite generally assumed that each country should have one. M.B. Line says that there is a danger that countries without a national library may feel that they are missing something absolutely essential to their well-being. Unfortunately in many of the countries which do have a national library, it is prevented by a variety of factors, e.g. lack of funds and effective power in performing the national functions. Many national librarians believe that this situation can be remedied by appropriate legislation.

3 National Libraries in Developing Countries

There are too many components affecting the establishment and maintenance of national libraries in the developing countries. Such components include low level of literacy and average standards of education, absence of reading habit, language barriers, poorly developed book trade, lack of highly skilled technical and professional staff, difficulties in obtaining foreign exchange, poor communication (roads, postal service, telecommunication), unreliable electricity supply, difficulties in maintenance services for operating equipment. In a developing country where book production is small, certain tasks may appear to be of minor scope – comprehensive collection of the nation's publications a) creating bibliographic record of these materials and b) providing access to such publications. It may even be necessary for the library to be involved in the recording of the oral traditions and in publishing indigenous materials, especially in the vernacular.

4 Collection and Conservation of National Publications

Every nation should have a comprehensive collection of its publications as national heritage that should be preserved for future generations. All

forms of recorded knowledge produced in a country should be collected and preserved. Most countries in the world have legislation to ensure that publications are deposited, either by publishers or by printers. The national Legal Depository Act has provision to deposit entire national publications at different places including the national library of the country. The comprehensiveness in the collection of the national library on national relevance could not be achieved by the national library alone in many countries in the world. However, efforts were made by most of the countries to achieve them. The legal provision was first made in France in 1537 to deposit the national publications to the national library of France. All forms of recorded information and knowledge produced in a country should be collected and preserved either in the original form or in surrogates. Austria enacted and implemented the deposit law in 1575 as well. The collections of the nation's publications represent the major and fundamental source of information on the history of the very nation. Such publications collected so far should be made available for consultation for the user's community.

5 Provision of Services to the Users

Legal deposit is important for national libraries because it can provide the basis for the collection and conservation of information materials published in the country, further for their bibliographic control and physical availability. It is relevant to heritage-related functions of the national library and assists in the compilation of national publishing statistics.

In some countries legal deposit is dealt with the copyright legislation. These two have a historical relation. Comprehensive national service is the delivery of services to end-users, not merely in a reading room in the capital city, but throughout the country. Many national libraries are established under the National Library Act of the nation. Such national libraries are strong enough to perform their functions effectively and efficiently.

Legal deposit is a statutory obligation which requires that any organisation, commercial or public, and any individual producing any type of documentation in multiple copies, be obliged to deposit one or more copies with a recognised national institution.

6 Obligations of the Nation

National libraries differ legally from traditional libraries in two major respects – their relation to the government and their role in the copyright or deposit system of the nation. More than 95 per cent of the national libraries in the world receive publications through the legal deposit law. Therefore

each nation should have this law to have bibliographic control on the national publications.

- a. States should, as a matter of urgency, examine existing deposit legislation and consider its provisions in relation to present and future requirements; and, where necessary, existing legislation should be revised.
- b. States currently without legal deposit legislation are urged to introduce it.
- c. New deposit laws, or regulations pursuant to such laws, should state the objective of legal deposit; should ensure that the deposit of copies is relevant to achieving the goals stated above; should be comprehensive in terminology and wording to include existing types of materials with information content and others which may be developed; and should include measures for enforcement of the laws. Such legislation may take into account the possibility of sharing responsibility for deposit among more than one national institution.

7 Coverage of the National Bibliography and National Union Catalogue

It is essential to make people aware of what has been published in the country or elsewhere about the country. This could be made possible by publishing the national bibliography. Exhibition of the literature about the country could also be done from time to time among the users community.

- a. National bibliographies should include the current national output, and where practicable they should also provide retrospective coverage. When necessary, selection criteria should be defined and published by the national bibliographic agency;
- b. The national bibliography should include records for materials in all the languages and/or scripts in which publications are produced within a state; and wherever possible these records should include the languages and/or scripts in which the publications originally appeared;
- c. The national library should also publish national union catalogues to make it easier for users.

Other legislation affecting the library and information services are –

- Right to information
- Depositories of government publications

- Censorship
- Privacy
- Registration of newspapers
- Telecommunication
- Cyber law
- Custom and excise duty

Other legislation could be the legislation about the employer-employee relationship – occupational, industrial relations, training, health and safety, public safety accounting and auditing systems. Apart from the law of the state the international conventions and treaties also affect the national library service in the country.

8 Case of Nepal

The Nepal National Library also felt the need of the Legal Depository Act in the country. With the help of UNESCO, a workshop was organised in March 1998 and an act was drafted and submitted to the Ministry of Education and Sports to proceed to the parliament for passing it. Till now the Ministry of Education and Sports could not forward the bill to the Ministry of Law and Justice for approval. The library professionals in the country are trying their best to get it passed by the parliament. We hope that it will be passed in the near future.

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National Bibliographic Control

Syed Ghyour Hussain*

1 Introduction

Effective bibliographic control is as vital for scientific, technological, economic and social research as the research in itself is essential for the progress and advancement of human civilisation. The term bibliographic control refers to the recording of all published and unpublished sources of information and knowledge, and making them readily available for the dissemination of knowledge. A systematic bibliographic control not only facilitates identification, verification, location and selection but saves time, labour and duplication in the field of research. A bibliographic control is the complex of facilities, procedures and devices which enables a researcher to find material of his choice, without wasting much time, from the ever increasing chaotic world of knowledge. There can be several approaches towards systematic and effective bibliographic control. These may be: universal approach, form approach, place approach, subject approach, language approach and ownership approach. The most ideal of them is universal approach. Eminent scholars from Bacon to Paul Ottlet strived to achieve this very goal of universal control but could not accomplish the Herculean task owing to many problems. Now this utopian idea seems on the verge of achievement with the application of ICT.

This present article does not deal with all types of bibliographic control but particularly with National Bibliographic Control especially in Pakistan's perspective. National Bibliographic Control, though has generally place and language approach to some extent yet it is universal in its subject approach as all kinds of intellectual ideas are endeavoured to be enlisted within a given span of time.

2 Preliminary Attempts Towards Bibliographic Control in Pakistan

The state of bibliographical services at the national level in Pakistan were scattered and not very satisfactory for obvious reasons at the time of independence. The value and potential benefits, role and functions of these

* National Library of Pakistan, Islamabad, Pakistan

services in the whole context of socio-economic development have yet to be fully recognised. However, the country has made some significant progress in this very important field with the limited resources in "men, money and material". The National Bibliography has been established, although it made a late beginning. National documentation and information systems for Science and Technology and its certain branches have been developed on modern lines. The Social Sciences and Humanities are still neglected areas. The bibliographical work in these areas is undertaken mostly by the libraries research and development organisations working in different fields and by individuals inspired by devotion and enthusiasm. The bibliographical services available in Pakistan are discussed in the coming pages.

Attempts were made as early as 1949 by some private and semi-government organisations to establish bibliographical services for specific fields of study and research, mostly relating to science and technology. The first Bibliographical Information Centre was set up jointly by the Fazle Omar Research Institute and the Pakistan Association for the Advancement of Science. The Association produced some bibliographical works, most notably a comprehensive bibliography on Pakistan entitled "Pakistan: A Select Bibliography", compiled by A. R. Ghani, a well-known and a senior bibliographer of Pakistan and published in 1951. The bibliography contains 9,000 references of books, reports, government publications and periodical articles published in English on Pakistan. It also includes literature bearing on the whole of India and published before the partition of the subcontinent. The Bibliography covers a wide range of subjects, but excludes education, archaeology, architecture, languages, literature, art, folklore, etc.

3 Pakistan: Bibliographical Working Group

One major stride towards Bibliographical Control in Pakistan was the formation of Bibliographical Working Group (PBWG) in 1950 initially with four leading librarians of the country, namely Messrs A. Moid, Fazal Elahi, Mohammad Shafi and Khwaja Nur Elahi to study the UNESCO/Library of Congress Bibliographical survey reports, circulated for opinion about the possibilities of improvement of bibliographical services. A report in respect of Pakistan was prepared and submitted to UNESCO in June 1950. This report was also published in the Third issue of Volume I of the "Modern Librarian" and the extracts of which appeared in Volume II of the National Development and International Planning of Bibliographical Services, published by UNESCO in the same year. UNESCO also invited a delegate from Pakistan to attend the Conference on the Improvement of

Bibliographical Services, held in Paris from November 7-10, 1950. Mr. Fazal Elahi, the then Editor of the *Modern Librarian*, attended the Conference. UNESCO again at its sixth session of the General Conference held at Paris in 1951, sponsored a project and at its meeting of April 1952 proposed three contracts, namely, Codification of Asian names for entries in catalogues and bibliographies; Directory of reference works published in Asia and a Guide to periodical publications of Asia. These contracts, in fact were made between UNESCO and the Indian Library Association.

The Indian Library Association (ILA) approached the Group for inclusion of data regarding Pakistan in the last two proposed directories. Taking into consideration the usefulness of the Pakistani chapters of both the directories, the Group decided to publish them as two separate works, namely, "A Guide to Works of Reference Published in Pakistan and, "A Guide to Periodicals and Newspapers of Pakistan". These were brought out in 1953.

Other bibliographical works of the Group include:

A Guide to Pakistan Libraries, Learned and Scientific Societies and Educational Institutions, 1957; revised in 1960 with an additional Section on "Who's Who in Librarianship in Pakistan".

Bibliography of Bibliographies published in Pakistan, 1961.

Union Catalogue of Periodicals in the Social Sciences held by the Libraries in Pakistan, 1961. This was published with the financial assistance of UNESCO.

The Group also compiled the retrospective Pakistan National Bibliography pertaining to the period 1947-61. They collected information from libraries throughout the East and West Pakistan and listed about 50,000 publications pertaining to the period. The data was examined and scrutinised carefully and consequently only 25,000 bibliographic entries were finally retained. The National Book Centre of Pakistan headed by celebrated scholar Ibne Insha realising the necessity of importance of retrospective National Bibliography and considering the amount of hard labour that had gone into its compilation, offered to publish it in two or three separate fascicules. Consequently Fascicule I covering General Works, Philosophy and Religion (000-297) and Fascicule II covering the Social Sciences and Languages (300-492) were published by the National book centre in 1972 and 1975 respectively. These fascicules cover the material published in Arabic, Bengali, English, Gujarati, Hindi, Persian, Punjabi, Pushto, Sindhi, Sanskrit, Urdu and other Pakistani languages the both wings of the country. The

description of the books has been recorded according to the rules adopted by the British National Bibliography. Fascicules are in classified sequence according to Dewey Decimal Classification 17th Edition. Material regarding financial statements of statutory companies was excluded from the bibliography. The Pakistan National Bibliography (1947 – 1961) Fascicule III covering the subject from Pure Sciences (500) to Geography and History (900) was published by the Government of Pakistan, Department of Libraries, National Library of Pakistan in 1999. The bibliography covers general as well as government bodies' publications in classified sequence based on 19th Edition of the Dewey Decimal Classification Scheme. The bibliography enlists all publications in any language published or printed in Pakistan, during the period August 1947 to December 1961 in the given subjects. The following type of publications were excluded.

- a) Musical scores.
- b) Maps.
- c) Periodicals and newspapers (except the first issue of a new periodical and the first issue of periodical under the new title).
- d) Keys and guides to textbooks.
- e) Ephemeral material such as trade catalogues, telephone directories, reports and financial statements of statutory companies, cheap novelettes and publicity pamphlets.

4 National Bibliographical Unit

Efforts on the government level to take up the work of compilation of the National Bibliography was made even earlier than the enforcement of the Copyright Ordinance of 1962 and nomination of depository libraries. The National Bibliographical Unit in the defunct Directorate of Archives and Libraries, Ministry of Education, Government of Pakistan was established towards the end of 1962. Its important functions include.

- 1. The Compilation of a current National Bibliography
- 2. Compilation of retrospective bibliography
- 3. Subject and select bibliographies
- 4. Contributions to national and International bibliographical projects.
- 5. Coordination with UNESCO and transmission of data about translated books printed in Pakistan for inclusion in Index Translationum

6. Coordination with national bibliographic centres of other countries and exchange of bibliographic data and national bibliographies on reciprocal basis.
7. To maintain Retrospective National Bibliography for the purpose of complete national bibliographical control since the creation of Pakistan.
8. Cooperation for universal bibliographic control.
9. Promotion of bibliographic activities and standards in the country.
10. Dissemination of bibliographic information on material published either in or about the country.
11. Extension of advisory service to local bibliographic activities.

There are two prerequisites to the bibliographic organisation and control of national literature. Firstly, there should be a well-enforced system of legal deposit, under which each and every publisher is required to deliver to the National Library or to any other Library designated for the purpose, one or more copies of his publications as and when they come out of the press. Secondly, there must be some organisations or any department of the National Library itself, which should compile the National Bibliography based on the legal deposits and publish it regularly at suitable periodic intervals.

At the time of the partition of the Indo-Pak Subcontinent in 1947, there were two legal systems enacted by the British Government of India concerning the registration of publications. The Copyright Act of 1914, which was chiefly for the safeguards of the interest of writers and the publishers, did not make any provision for the deposit of publications except those, which were granted copyright protection. The Press and Registration of Books Act of 1867 also did not provide for the deposit library. It was more of a political nature. The primary purpose of this Act was to check the publication of material detrimental to the interests of the Government of India. Under this Act the printers (not publishers) were required to deposit one or more copies of their publications with the authorities which were made responsible to send such deposits either to the respective Provincial Press Information Department or the Registrar of Publications, as the case may be for registration and preparing a catalogue, providing detailed information about each and every publication and for maintaining it in a special register called the "Memoranda of Books". These catalogues used

to be published quarterly as supplements to the various Provincial Gazettes under the Head "Catalogue of Books Registered during the Quarter Ending".

Pakistan adopted both these Acts, which remained in force for quite some time. The Press and Registration of Books Act of 1867 was replaced in 1960 by the Press and Publication Ordinance No.XV which was further amended in 1963. This Ordinance is similar in nature and content and serves almost the same purpose as the Press and Registration of Books Act of 1867. Under this Ordinance four copies of each book, magazines and newspaper are deposited by their respective printers (not publishers) with the provincial Press Information Departments, where complete details of each publication are recorded in a Special catalogue.

The work of the National Bibliographical Unit of Pakistan was handicapped by the absence of Depository Act in the country. However, Pakistan National Bibliography Annual Volume 1962 was compiled and published in 1966 by the Unit. The Copyright Act of 1914 was replaced by the Copyright Ordinance No.XXXIV, which was passed in 1962. It became effective on and from the 27th February, 1967. The Ordinance provides for the deposit of all publications, including newspapers and magazines, with the National Library of Pakistan, Islamabad. The relevant Articles are reproduced below:

5 Article 47 Delivery of Books to Public Libraries

1. Subject to any rules that may be made under this Ordinance, but without prejudices to the provisions contained in Section 40 of the Press and Publication Ordinance of 1960, the publisher of every book published in Pakistan, after the commencement of this Ordinance, shall notwithstanding any agreement to the contrary, deliver, at his own expense, one copy of the book to each of three public libraries, within thirty days from the date of its publication.
2. The copy delivered to the National Library of Pakistan, Islamabad shall be a copy of the whole book, with all maps and illustrations belonging thereto, finished and coloured in the same manner as the best copies of the same and shall be bound, sewed or stitched together and on the best paper on which any copy of the book is printed.
3. The copy delivered to any other public library shall be on the paper on which the largest number of copies of the book is printed for sale and shall be in the like condition as the books prepared for sale.

4. Nothing containing in Sub-Section (I) shall apply to any second or subsequent editions of a book in which edition no additions or alterations, either in the letterpress or in the maps, book prints or other engravings belonging to the book, have been made and a copy of the first or any other edition of which book has been delivered under this Section.

6 Article 48 Delivery of Periodicals and Newspapers to Public Libraries

Subject to any rules that may be made under this Ordinance but without prejudice to the provision contained in Section 36 of the Press and Publication Ordinance of 1989, the publisher of every periodical or newspaper published in Pakistan shall deliver at his own expense one copy of each issue of such periodical or newspaper as soon as it is published in each of the public libraries.

Following three libraries were designated by the Government of Pakistan under Depository clauses of the Copyright Ordinance for Delivery the published materials to these libraries in Pakistan w.e.f February 19, 1968. However, at present there is only one depository library in the country which is NLP.

1. Delivery of Books and Newspapers Branch, National Library of Pakistan, Islamabad, Block "D", Pakistan Secretariat, Islamabad (now Constitution Avenue, Islamabad)
2. Delivery of Books and Newspapers Branch, Central Library, Dacca, 2/5 Shahjahan Road, Muhammjadpur, Dacca 5 (now in Bangladesh).
3. Delivery of Books and Newspapers Branch, Liaquat Memorial Library, Karachi, Block No.71, Pakistan Secretariat, Karachi-5 (now Stadium Road, Karachi).

7 Current Pakistan National Bibliography

Current National Bibliography starts from the year 1962. It is being published by National Bibliographical Unit, National Library of Pakistan, Islamabad, regularly after an interval of one or two years. Details of its publications are as under:

S. No.	Pakistan National Bibliography	Year of Publication
1.	PNB 1962	1966
2.	PNB 1963-64	1972
3.	PNB 1965-67	Not published due to War
4.	PNB 1968	1970
5.	PNB 1969	1974
6.	PNB 1970-71	Not published due to War
7.	PNB 1972	1976
8.	PNB 1973	1977
9.	PNB 1974	1978
10.	PNB 1975	1978
11.	PNB 1976	1979
12.	PNB 1977	1980
13.	PNB 1978	1980
14.	PNB 1979	1985
15.	PNB 1980	1985
16.	PNB 1981	1985
17.	PNB 1982	1986
18.	PNB 1983	1988
19.	PNB 1984	1986
20.	PNB 1985	1987
21.	PNB 1986	1988
22.	PNB 1987	1989
23.	PNB 1988	1990
24.	PNB 1989	1992
25.	PNB 1990	1994
26.	PNB 1991	1994
27.	PNB 1991	1994
28.	PNB 1992	1996
29.	PNB 1993	1997
30.	PNB 1994	1998
31.	PNB 1995	1999
32.	PNB 1996	1999
33.	PNB 1997	2000
34.	PNB 1998	2000
35.	PNB 1999	2000
36.	PNB 2000	2001
37.	PNB 2001	2002
38.	PNB 2002	2003

The objectives of the Pakistan National Bibliography are to list new works published in Pakistan and received in the National Library under Copyright Law. The Pakistan National Bibliography describes each work in detail and gives the subject matter of each work as precisely as possible. The following classes of publications have been excluded:

- a. The keys and guides to textbooks and ephemeral materials such as, publicity pamphlets, etc.
- b. Periodicals
- c. Maps
- d. Musical Scores

The Pakistan National Bibliography has been divided into two sections since publication of PNB 1989. These sections are:

- a. European Languages: This sections covers Pakistani publications written in English and other European Languages. Generally 30 per cent of Pakistani publications are published in English.
- b. Oriental Languages: It covers Pakistani publications written in Urdu (National Language), other Pakistani (Sindhi, Pushto, Balochi, Punjabi, Saraiki, Kashmiri, Brahuvi, etc.) and Oriental Languages (Arabic Persian, etc.) According to an estimate 60 per cent of Pakistani publications are published in Urdu and 10 per cent in other oriental/provincial languages.

The arrangement of bibliography is subject-wise. The classification of subjects has been based on the various editions of Dewey Decimal Classification. Presently, the 20th edition of DDC is in practice. Cataloguing practices follow the Anglo-American Cataloguing Rules, 2nd ed, 1978 as well as IFLA's recommendation for adoption of International Standard Bibliographic Description (ISBD) and IFLA's publication entitled "Names of Persons: National Usage for Entry in Catalogues".

The Cataloguing of Pakistani names is generally based on the recommendations made by Dr. Anis Khurshid in his publication entitled "Cataloguing of Pakistani Names". The full information about books is given in the classified section. They include author's name, the place of publication, the publisher, the year of publication, the price, ISBN, etc. The language of the book, other than English, bilingual or multilingual books are denoted by symbols which are given at the left hand bottom corner of each entry.

The accession number of each book is shown against each entry in parenthesis. A list of abbreviations and language symbols used in the bibliography is given after the included in the bibliography, appears at the end of the index.

Each part of the bibliography has a separate index which contains entries or reference entries under authors, titles, editors, translators, compilers, series and subjects in one alphabetical sequence. In certain cases, the entries have also been made under the names of the institutions responsible for bringing out the publications. The entry under the author gives, in an abbreviated form most of the information to be found in the entry in the Classified Section so that, for most purposes it is not necessary to refer back to that entry when an author or title of a book is known. If, however, a full description can be found by means of the decimal code number given at the end of the author entry.

8 Linguistic Diversity Covered by Pakistan National Bibliography

Pakistan National Bibliography covers the following National and Regional Languages. It is worth mentioning that the script of all languages in the country is Arabic except English.

Language Symbol	Language	Language Symbol	Language
A	Arabic	P	Punjabi
Ba	Balochi	Pe	Persian
Bl	Balti	Po	Pothohari
Br	Brahuvi	Pu	Pushto
Bs	Brushesai	S	Sindhi
Ch	Chitrali	Sa	Sariki
E	English	Sh	Shina
G	Gujarati	U	Urdu
Gl	Gilgiti		
Go	Gojri		
Hd	Hindko		
K	Kashmiri		

Library and Information Services in the Russian State Library: State of Affairs, Problems, Prospects of Development

Natalia Berezina*

1 Introduction

By now the Russian Library network consists of about 150,000 libraries. The Russian State Library in Moscow with its holdings going up to almost 43 million units of storage and the Russian National Library in St. Petersburg possessing upwards of 20 million units of storage are Russia's foremost national libraries of equal rank.

With two libraries enjoying the federal status, namely Rudomino All-Russian State Library of Foreign Literature, State Public Historical Library, State Social and Political Library, Russian State Art Library, Russian State Juvenile Library, Russian State Children's Library, Russian State Library for the Blind and more than 280 central libraries in all 89 subjects of the Russian Federation the network of public libraries is very far-flung. There are 50,000 municipal public libraries in towns and rural settlements. Three hundred and seventy-five libraries make up the library system of the Russian Academy of Sciences. Presently on the average one stationary public library falls to every 3,000 inhabitants.

2 Library Holdings

About 11.5 million rare and precious documents including more than 1.5 million handwritten items dating from the 5th to the 20th century, about 9.5 million rare and precious publications printed in the 19th and 20th century are kept by federal libraries subordinated to the Ministry of Culture of Russia.

Seventy per cent of all book monuments are kept by two national libraries, the Russian State Library and the Russian National Library with the rest making up 3.5 million monuments leading off with the 12th century being dispersed over other federal and regional libraries of Russia.

* Director, Library Information Service, Russian State Library, Moscow, Russian Federation

The RSL is the national library of Russia and so its prime task and mission are gathering, preserving its universal collection of documents that reflect human knowledge and are connected first of all with Russia and its national interests as well as placing them at users' disposal.

The RSL carries out functions of state, research, information, cultural and educational institutions.

3 Library Activities

A handful of figures characterise the library activities. In 2004 the stocks of the RSL run into 43 million units of registration in 249 languages. The area taken up by the library reaches 132,000 square metres. The library has 29 reading rooms intended for 2200 users' seats. About 1,400,000 Russian and foreign users visit the library per year with issuance of books to the reading rooms making up 9.5 million. There is an international book exchange with almost 100 foreign countries. The library employs 2300 persons.

The RSL library and information services both onsite users in the reading rooms and remote users are one of its basic, fundamental activities.

Users are offered a wide range of bibliographic reference and information services, namely receipt of literature in reading rooms both from the holdings of the RSL and from other Russian and foreign libraries, reproduction of documents, access to world information resources through traditional bibliographies, data bases on CD-ROM of Russian make and manufactured abroad and bought by the RSL, the Internet and so on.

The RSL is open to general use, it serves citizens of eighteen years and over. About 48 per cent of its readers are scholars, scientists, specialists with higher education, 44 per cent of the users have no higher education (mainly students) and foreign readers from 90 countries constitute 8 per cent.

The RSL is heart and soul for the general accessibility of its stocks and of information by means of making it possible for the users to receive any documents kept by the RSL in the original or in copy (for the purpose of their preservation) and to use any components of its reference facilities regardless of their shape-in card, printed, electronic form.

4 Further Development

In the present historical period the RSL is faced with a series of new problems and failing their successful solution the library will not be in a position to attain a high level of information and library services.

All plans of further development proceed from the necessity of carrying out the enormous task of reconstructing library edifices aged 50 years with the first building — Pashkov mansion — being 200 years old. Since 2000 the RSL has been reconstructing supply network of the main building and of the chief storage without ceasing the services.

The RSL sets its hopes on erecting a new block near the main complex with a view to drastically remedying the problems facing the library.

The preservation and availability of stocks are one of the most acute issues of national libraries in that it is necessary to ensure users' broad access to them and to contrive to preserve them at the same time.

To the mind of the RSL the problem can be tackled by stirring up the duplication of documents for the transfer to various non-paper carriers and microcarriers and electronic versions, introduction of new information technologies to enhance search possibilities and velocity of the receipt of full text information from other libraries and hubs of information.

The place of the RSL is within the unified world information sphere since no library can go without answering users' information queries to the highest possible degree.

5 Future of Libraries

Now information technologies included upon traditional library process bear hardly on all facets of their activities and in particular on the acquisition of stocks. Nowadays the belief is widely held that the future of libraries lies not in processing stocks but in securing the access to information. The number of libraries relinquishing the acquisition of certain publications in preference to the use of the remote access is presently growing. There is no doubt that the balance of the preservation and access must be kept. On the one hand, this balance must assure the mutually beneficial partnership of libraries and on the other hand, it must ensure the complete satisfaction of users' information demands. One succeeds in achieving this by way of the unified policy of formation of the shared library and information stock.

In the realm of acquisition of Russian literature the task to tackle is the formation of the greatest possible array of Russian publication, but the view is gaining ground that the completeness of acquisition is to be considered within the framework of the common national stock with the national library sharing its traditional responsibility with the rest of the libraries. Distribution of duties is laid down in legal acts or agreements between national and other libraries.

Acquisition of foreign materials depends on the financial ensurance to a greater degree as against the acquisition of the Russian literature. By no means can every library afford the purchase of expensive foreign publications. At present, two steady trends are growing rife in the development of the international acquisition policy of libraries:

- ❑ Adopting strict criteria of choice of foreign documents attended by laying down priorities
- ❑ Pooling financial resources in the acquisition

Russian libraries have experience in regional and intradepartmental amalgamations interacting on the basis of coordination in acquiring literature. Coordination ties are reached in legal documents (status of the unified stock, unified acquisition policy). Besides, Russia has two projects of federal importance. One of them deals with the microfilming of newspapers, the All-Russian Library of Foreign Literature being in charge of it. The composition of the participants is constantly on the increase. The second project is dedicated to the Russian interdepartmental groups of access to foreign electronic periodicals. Uniting the libraries is instrumental in solving the licensing problems for the use of electronic information provided on commercial terms.

This kind of cooperation can be exemplified in interdepartmental groups of access to foreign electronic periodicals issued by the scientific Springer Publishing House (approximately 1000 titles), the EBSCO – an on-line base of full text periodicals on science, technology, medicine (upwards of 2,000 titles), the Russian electronic library (somewhere about 200 titles) assisted by the Elsevier publications, institute “Open society”, Russian foundation of fundamental research and others.

6 RSL Activities

Services to remote users through interlending remains one of the main directions of activities of the RSL since it is the paramount centre of interlibrary loan and document delivery in Russia and an active partner of the Russian interlending and the international interlibrary loan. The RSL carries on interlending with 250 libraries abroad. The RSL is the coordination centre of the national interlending system and of the interlending system of countries of the Commonwealth of Independent States. Significant regulating documents “Status of the National Interlending System” and “Status of the Interlending System of the Commonwealth of Independent States” have been drawn up. The RSL is at the head of the intergovernmental interlending section of the C/S.

In recent years the library has put considerable effort into refining the service system and enlarging the volume of services to the users including paid services of attendance character through the library holds fast to the position of free traditional library services.

Strenuous work on organising and maintaining the catalogues is in full swing. The volume of card catalogues is tremendous, namely 53.5 million cards. The library is working hard on its electronic catalogue, reflecting the literature which has appeared since the 1980s.

The RSL is active in setting up an electronic library by using diverse approaches for the digitisation of documents from the RSL stocks employing directly hands, joint projects with commercial enterprises, electronic document delivery within the framework of the service "Russian courier". The rate of the transfer of books to the electronic form is brisk today, namely about 1000 units a month.

In collaboration with the US Library of Congress the project of digitisation of publications on history of the pioneering of Siberia and Alaska "Meeting of Frontiers" is underway. Under the UNESCO programme "Memory of Russia" of digitising ancient Slavonic books dating from the 15th to the 16th century is on.

Any sketch of the RSL activities concerning information resources and services will be incomplete without record of the research centre "Informculture". Nowadays it is entirely automated, it possesses immensely rich information resources created in conjunction with two foremost libraries, namely Moscow State Conservatoire and All-Russian State Library of Foreign Literature.

Nowadays the centre puts out eight series of bibliographic and abstracting indices — Librarianship and bibliography, representational art, sociocultural activity in the sphere of leisure, museum work and protection of monuments, music, culture, culturology, theatrical art, aesthetical upbringing — and nine series of research and information and purely information collections.

7 Conclusion

In spite of active work on the informatisation of the library and on the transfer to the electronic form it is obvious that it takes a long time until a bigger part of the world printed produce has been digitised and mixed forms of information carriers are apparently to stay on for good.

We see therefore the future of our library as a well-balanced system of forming and employing Russian information resources with mutually complementing forms and methods within the pale of the world community.

SILAS - The Singapore Integrated Library Automation Services: A Product of the National Library Board of Singapore

Ngian Lek Choh*

1 Introduction

SILAS : Our Mission Statement

SILAS offers bibliographic services and products to libraries in Singapore. Within its system of databases, it hosts the National Union Catalogue, to which the SILAS members contribute. It provides its members bibliographic records for copy cataloguing and facilities for original cataloguing and the editing of records. It also provides an online environment for cooperative cataloguing, setting standards and policies and ensuring quality.

SILAS grew out of proposals made by the Library Association of Singapore in 1982. After a feasibility study and preparatory work, a licensing agreement for software to run such a service was signed with the Western Library Network, Australia in August 1985. The service was officially launched on April 10, 1987.

2 About SILAS

SILAS's main task is to promote cooperative online shared cataloguing services among its participants. The database also provides online enquiry access through which reference searches are done.

SILAS maintains a National Union Catalogue, facilitates cooperative acquisition and interlibrary loans among member libraries and expedites the compilation of current and retrospective bibliographies. Other than its online services, SILAS also provides a wide range of products and bibliographical support services to Singapore libraries.

SILAS has provided Singapore libraries with online-shared cataloguing

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services since 1987. It recently implemented a new computerised system to update SILAS services to consortium members. With the introduction of a new technology base, SILAS is determined to provide members with superior services covering the following core functions:

2.1 National Bibliographic Database Services

The SILAS database consists of a large warehouse of bibliographic and subject authority records built from the loading of MARC records mainly from the Library of Congress. Other sources of bibliographic records include the Australian Bibliographic Network, Professional Media Service Corp. (PMSC), the British Library and the Online Cataloguing Library Consortium (OCLC). The Singapore National Bibliography, residing on the SILAS database, provides members with a timely and rich source of bibliographic records of titles pertaining to Singapore.

2.2 Cooperative Online Shared Cataloguing Services

As a consortium existing for the mutual benefit of all members, SILAS's online cataloguing services eliminate duplicated efforts in original cataloguing. SILAS member libraries can efficiently obtain bibliographic records by simply attaching holdings to copy catalogue records. The cloning of bibliographic records is another means of increasing cataloguer productivity. Libraries can parameterise (at the 59x and 69x tag levels) data that is Institution Dependent Data (IDD) to ensure that no other library can view or update these IDD fields. Updates to the SILAS database will update non-IDD fields.

Date	16	005	20030408100325.0
Fixed Data	40	008	010711s1988 ii 000 0 tam d
Local On #	17	035	1a(SILAS)10402661
Cat. Source	10	040	1aNLB1cNLB
Dewey Class	13	032 04	1a294.5421221
ME Pers Name	31	100 0	1c880-011aCātya Śrīgīvacag
Title	97	245 10	1c880-021aŚrī Matva tarcagam /1cCātya Śrīgīvacag; patippācīnyar: Vikaru. Irāmanātag.
Imprint	55	260	1c880-031aCēppal:1bŚrī Intu Paplikēṣags,1c1988.
Phys. Descrip	17	300	1c880-041a160 p.
Subj. topical	23	650 0	1aExperience (Religion)
Subj. Topical	11	650 0	1aHinduism.
Alt. Pers Name	32	700 1	1c880-051aIrāmanātag, Vikaru.
Alt. Pers Name	27	860 0	1c100-011aசத்யா ஸ்ரீனிவாசன்
Alt. Pers Name	83	630 10	1c245-021aஸ்ரீ மதவ தாசனம் /1cசத்யா ஸ்ரீனிவாசன், பதிப்பாசிரியர்: விக்ரு. இராமநாதன்.
Alt. Pers Name	51	880	1c260-031aசென்னை:1bஸ்ரீ இந்திய பப்லிகேஷன்ஸ்,1c1988.
Alt. Pers Name	19	880	1c300-041a160 பக்.
Alt. Pers Name	26	830 1	1c700-051aஇராமநாதன், விக்ரு.
NON-ISMARC	14	838	1aTamil qTamil
NON-USMARC	16	810	1aCARL0010402661
NON-ISMARC	98	998 02	1aITS163.60 200107111143036 0 ITS2 NLB 1a1 D5509

2.3 Building a National Union Catalogue

The adding of holdings to bibliographic records by SILAS members causes the direct creation of Singapore's National Union Catalogue. This national effort provides librarians and library users with a single source of locating holdings of titles held in Singapore libraries. This facilitates the sharing of library resources through the Inter-Library Loan process.

(3000)Live: SILAS GLOBAL CATALOGUE: keyword search on "COMPUTER LITERACY"				
Select Back		Print	Pause Download	
Title	Author	Call Number	Date	Format Terms
Computer literacy			2003	
Survey on computer users an...			1981	
Effect of interaction between ...	Kearns, Hugh.		1995	
Information literacy tutorial	Eland, Thomas W.		1999	SOFTWARE
Lesson plans			2001	SOFTWARE
Sounds great two			2002	SOFTWARE
Leading literate lives papers	Joint National Confe		2001	SOFTWARE
Literacy Bank 4			200u	SOFTWARE
Literacy Bank 3			200u	SOFTWARE
Achievement matters : gettin...	Price, Hugh B.		2003	
The house literacy resource			2003	SOFTWARE
Directory of online resources ...			1999	eBOOK
GeoTutor building geographic...			1999	SOFTWARE
Resources for assessment			2003	
Teaching information literacy ...	Burkhardt, Joanna M.		2003	
Science netLinks			2002	eBOOK
Kimberley bandscales for Ab...			2002	SOFTWARE
Computer usage and wages l...	Miller, Paul.		1996	
Full Record Serials Level 3 Serials Level 4 MARC				
[LDR] 00000nam 22000005 4500				

2.4 A Web-based Online Catalogue

A Web-based online National Union Catalogue can be provided to libraries to serve their patrons better. This user-friendly Web catalogue interface is end-user intuitive and can provide researchers with a tool to locate library material held by Singapore libraries.

2.5 Multilingual Capabilities

The SILAS system is UNICODE compliant. This provides SILAS with the technological basis to input, search and edit multilingual bibliographic records. This in turn provides SILAS with the ability to import records from other multilingual bibliographic sources. The system provides full support for the 880 tags for storing vernacular script.

MARC Leader	10	LDR	nama 00
Created Date	40	006	001228s1999 cc a 000 0 ch d
001	23	020	1a7542215027 :1cRMB6.00
003	16	035	1a(SILAS)9738594
004	10	040	1aNLB1cNLB
005	4	066	1c\$1
006	5	082 04	1a004
MD: Pers Name	21	100 1	1a880-011aMeng, Jing
Title	65	245 10	1a880-021aDian nao ling tong /1cMeng jing, cai xian mei bian zhu.
007	68	260	1a880-031a[Lan zhou] :1bGan su shao nian er tong chu ban she, 1c1999.
Phys Descript	37	300	1a880-041a4, 153 p. :1b11 :1c21 cm.
Notes Lang	13	046	1a1n Chinese.
Subl Topica	20	650 0	1aComputer literacy.
MD: Pers Name	24	700 1	1a880-051aCai, Xian Mei.
Alt Represent	15	860 1	1a100-011a1c孟静
Alt Represent	30	880 10	1a245-021a1a电脑英语 /1c孟静, 蔡鲜美编著
Alt Represent	38	860	1a260-031a1a[兰州] :1b甘肃少年儿童出版社, 1c1999.
Alt Represent	35	880	1a300-041a1a4, 153页 :1b插图 :1c21公分.
Alt Represent	16	890 1	1a700-051a1a蔡鲜美
NON-USMARC	18	898	1aChinese qChinese
Cat Source	10	040	1aNLB1cNLB
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MD: Pers Name	49	100 1	1a880-011aCellappā, Nā 1a(Nākalīnkam), 1d1917-
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Edition	25	250	1a880-031a2-ām patippu.
Imprint	54	260	1a880-041aCeggai :1bMañimēkalaip Piracuram, 1c1997.
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Alt Represent	82	880 10	1a245-021aதிருமந்திரமும் சிவஞானபோதமும் :1bஓர் ஒப்பு நோக்கு ஆய்வு /1cநா. செல்லையர்.
Alt Represent	25	880	1a250-031a2-ஆம் பதிப்பு.
Alt Represent	47	880	1a260-041aசென்னை :1bமணிமேகலைப் பிரசுரம், 1c1997.
Alt Represent	17	880	1a300-051a88 பக்க.
NON-USMARC	14	893	1aTamil qTamil
NON-USMARC	16	910	1aCARL0010402654
NON-USMARC	88	998 02	1aITS163 S0 20010711142658.0 ITS2 NLB 1bLDR509
			200308261000140 TAMI NLR

3 The SILAS Database

The size of the database has grown from 3.9 million bibliographic records in 1986 to over 8.4 million today. The majority of these records are purchased from overseas, namely the LCMARC, UKMARC, OCLC Southeast Asian Microforms, PICA, BISA, MALMARC and PMSC. SILAS also obtains records from ABN and NZBN through a mutual exchange of SNB records. The major strength of the database lies in the creation of original records input by the present members.

3.1 ANB (Australian National Bibliography) lists books and pamphlets published in Australia. Overseas publications by Australians or with Australian subject content are also included. As of September 17, 1999 a total of 138,812 records covering the period September 1988 - September 1999 were loaded. Current records are added monthly.

3.2 BISA (Bibliographic Information on Southeast Asia) is a cooperative project based at the University of Sydney. A total of 37,116 records were loaded into the SILAS database in January 1992. The main focus of BISA is on Indonesian materials, with a secondary focus on Malaysian and Singaporean materials. Filipino, Thai and Vietnamese materials have also been covered.

3.3 LC (Library of Congress) tapes are loaded on a weekly basis. Although many individual records describe items catalogued in previous years, comprehensive coverage for books is from 1968 onwards, for serials from 1973, for films from 1972, and for music from 1984 onwards. Loading of LC tapes into the SILAS system began in September 1987.

3.4 MALMARC records cover Malaysian and Indonesian imprints catalogued by the MALMARC Consortium in Malaysia. A total of 30,000 records were loaded on January 18, 1988.

3.5 Some 3,178 records from the **OCLC** SEA Microfiche collection from 1978-1980 were converted to SILAS standards in March 1990.

3.6 Some 43,171 **NZBN** (New Zealand Bibliographic Network) records were loaded into the SILAS database in January 1992. These are records about New Zealand or of New Zealand imprint. Current records are added quarterly.

3.7 PICA records are from a consortium of academic libraries in the Netherlands. A total of 5,909 records of Southeast Asian imprints were loaded on September 5, 1987.

3.8 A total of 150,000 **PMSC** records of audiovisual materials were loaded to the SILAS database in March 1997. Weekly updates of records were sent through FTP.

3.9 Some 5,110 **SNB** records in English and Malay catalogued between April 1982 and July 1986 were converted from SINGMARC and loaded into the SILAS database in early 1987. Since then, all SNB titles have been inputted online.

3.10 UK tapes are loaded on a weekly basis. Although many individual records describe items catalogued in previous years, comprehensive coverage is from 1980 onwards. Loading of UK tapes into the SILAS database began in November 1987.

3.11 The **WLN** database of some 3.9 million records was loaded into SILAS by November 1986, forming the backbone of the SILAS database.

Currently, SILAS subscribes to files from the Library of Congress, the British Library and the PMSC. SILAS users also enjoy direct access to OCLC's WorldCat database, which contains over 44 million records from many different sources (now including WLN and PICA in the above list). SILAS is constantly examining new potential sources of records in order to offer its members as much record copy as possible within a realistic budget.

4 The Different Database Levels

At the highest level, the database contains a superset or "warehouse" of bibliographic records. The database contains every bibliographic record in the system irrespective of whether any SILAS member libraries have a copy of the title associated with the record. This database of nearly 8.5 million records forms the basis of SILAS copy cataloguing resources. This SILAS database is continuously refreshed through original cataloguing records contributed by SILAS members and the loading of records from other cataloguing utilities. Any updates to records are automatically flowed down to all member databases unless updates are protected from local specified IDD tags.

The middle level of the SILAS database structure contains the National Union Catalogue. The NUC is automatically built and updated as libraries attach or delete their holdings on the system. The NUC shows users which libraries hold at least one copy of individual titles within the SILAS consortium.

Finally, the institutional level contains all titles held by each individual SILAS member or institution. When records are claimed by any institution, the participant's database is updated. This causes the NUC-level databases to be updated automatically. If an original catalogue record is added to an institution's database, the effect is a simultaneous and automatic update to the NUC and SILAS database level (the warehouse-superset level).

Attached to each institution is a review or working file where bibliographic records can be temporarily housed for review by peers or supervisory cataloguers before they are saved to the member's institutional-level database. SILAS has a review file where members can send their bibliographic records for SILAS staff validation.

5 SILAS Services and Products

SILAS provides its users with online services and other products, training, and help desk support, all specially tailored to meet users' needs and requirements.

5.1 Online Services

The online services include:

- Copy cataloguing and original cataloguing facilities
- Inquiry/search facilities through both the cataloguing software and a Webopac
- Website with news, messages, cataloguing statistics, holdings updates, etc.
- File transfer facility

5.2 Additional Products

The following additional products are also available on request:

- Custom bibliographies (hard or soft copy)
- Custom reports derived from the NUC
- MARC files derived from the NUC
- Accession lists
- Catalogue cards

5.3 Help Desk

The SILAS Help Desk provides support for both online and off-line services. Extensive assistance is given especially to new participants and those who are not familiar with the ITS software. The Help Desk team also helps users liaise with vendors, their information system officers, and computer services departments.

Annex 1 indicates the list of responsibilities of SILAS and participating members and Annex 2 shows the list of SILAS members.

More details on SILAS may be obtained from its Website <http://www.silas.org.sg>

Annex 1**Responsibilities of SILAS and Participating Members of SILAS****Undertaking of SILAS**

1. SILAS will provide access to catalogue records in the National Union Catalogue of Singapore ("NUC") and from other sources, for display and downloading into the Contributing Member's local database.
2. SILAS will provide the means to add catalogue records to the NUC, to delete catalogue records from the NUC, and to edit catalogue records in the NUC.
3. SILAS will provide cataloguing facilities and make available the NUC twenty-four hours a day, excluding Sundays.
4. SILAS will provide technical assistance in accessing, downloading and uploading NUC records.
5. SILAS will provide basic training and instruction in the use of the software provided for accessing, downloading and uploading NUC records.
6. SILAS will provide a "Helpdesk" service to assist Contributing Members with any problems they may encounter with the use of SILAS services at least from 9:00 a.m. to 5:00 p.m. from Mondays to Fridays, and from 9:00 a.m. to 1:00 p.m. on Saturdays, excluding public holidays.
7. SILAS will provide monthly statistics of the Contributing Member's cataloguing activities, and quarterly updates of the Contributing Members current holdings of unique titles in the NUC, by medium and date of publication.
8. SILAS will advise on the necessary connections between clients and servers as applicable in order for the Contributing Member to use the SILAS services.
9. SILAS recognises that the ownership rights of all records entered into the NUC originating from the Contributing Member reside with the Contributing Member.
10. SILAS reserves the right to terminate or suspend the participation of any Contributing Member found not abiding by the guidelines set out by SILAS relating to participation.

Undertaking of Contributing Member of SILAS

1. The Contributing Member undertakes to add, edit and delete catalogue records in the NUC within the limitations, standards and conditions determined from time to time by SILAS and the SILAS Standards Committee on the advice of the NLB.
2. The Contributing Member undertakes to enter all of its cataloguing into the NUC. An exemption from this clause with regard to any specific materials may be sought from SILAS and will apply should SILAS agree to such an exemption in writing.
3. The Contributing Member undertakes to attach holdings statements to all of its bibliographic records in the NUC.
4. The Contributing Member undertakes to notify SILAS of authority control required as a result of its cataloguing and as specified in the published SILAS documentation.
5. The Contributing Member shall not supply machine-readable copies of any catalogue records provided by SILAS to any other party except with the agreement of SILAS and subject to any terms and conditions specified by SILAS. The Contributing Member's original cataloguing is excluded from this clause.
6. By inputting original records into the NUC, the Contributing Member thereby allows SILAS the right to redistribute and make available such records in accordance with the bibliographic functions SILAS performs for the NLB. However, the ownership rights of such records remain with the Contributing Member.

Annex 2

SILAS Member Libraries	SILAS Code
Asian Civilisation Museum	ACM
Attorney-General's Chambers	AG
British Council	BCIC
Data Storage Institute	DSI
Defence Science & Technology Agency	DTT
Goethe-Institute, Singapore	GI
Government of Singapore Investment Corporation	GIC

SILAS Member Libraries	SILAS Code
Housing & Development Board	HDB
Institute of Public Administration & Management	IPAM
Institute of SEA Studies	ISEAS
Institute of Technical Education	ITE
Intellectual Property Office of Singapore	IPOS
JTC Corporation	JTC
KK Women's & Children's Hospital	KKH
Land Transport Authority	LTA
Legal Aid Bureau	LAB
Management Development Institute of Singapore	MDIS
Maritime & Port Authority of Singapore	MPA
Ministry of Community Development & Sports	MCD
Ministry of Education HQ	MOE
Ministry of Foreign Affairs	MFA
Ministry of Information & the Arts	MITA
Ministry of Trade & Industry	MTI
Monetary Authority of Singapore	MAS
Nanyang Polytechnic	NYP
National Archives of Singapore	NAD
National Council of Social Service	NCSS
Ngee Ann Polytechnic	NPCL
NLB, Library Support Services	NLB
NLB, National Reference Library	NLB
NTU, Division of Information Studies	
NTU, National Institute of Education	NIE
NYP, International Business Resource Centre	IBRC
Parliament House	PARL
Practice Performing Arts School	PPAS

SILAS Member Libraries	SILAS Code
Raffles Institution	RI
Raffles Junior College	RJC
READ@ TN	ETRC
Republic Polytechnic	RP
SAFRA Bukit Merah	SAFRABM
SAFTA Toa Payoh	SAFRATP
SAFTI Military Institute	SAFTI
SEAMEO Regional Language Centre	RECL
Singapore Art Museum	SAM
Singapore Botanic Gardens	SXG
Singapore Chinese Girls School	SCGS
Singapore Civil Defence Force	SCDF
Singapore History Museum	NM
Singapore Institute of Management	SIM
Singapore Management University	SMU
Singapore Police Force	SPF
Singapore Sports Council	SSC
St Andrews Junior College	SAJC
Subordinate Courts	SUC
Supreme Court	SUC
Temasek Polytechnic Library	TPL
TP, Division of Information Management	
Urban Redevelopment Authority	URA

Vendor Members

Advance Library Services Pte Ltd
 Books & More Pte Ltd
 Huge-de-Man Enterprise Pte Ltd
 MPH Bookstores (S) Pte Ltd
 Pansing Int'l Library Services Pte Ltd
 Raji Publication (S) Pte Ltd
 Union Book Co (Pte) Ltd

The Role of the National Library of Uzbekistan in its Assistance to Users

Absalom Umarov*

1 Introduction

In 1870 the National Library was opened for the masses as Tashkent Public Library. During the years of its activity the National Library indeed has become the national library. It performs a humane mission as the curator of the national documentary heritage of the Uzbek people. The NL collection holds above ten million publications. This unique collection of the national written culture (more than 250,000 copies) includes rare and antique editions, manuscripts, lithographs, first national periodicals, books and other documents.

There are some pearls among them such as the first books in Uzbek: Sh.M. Ibragimov. Kalendar (Tashkent, 1872); N.P. Ostroumov. Amir Temur (Tashkent, 1890); N.P. Ostroumov. Skazanie o gorode Oshe (Tashkent, 1885). There are also works on the history of Turkestan: "Turkestanskij sbornik" in 594 volumes generated from the articles and anthologies; "Turkestanskij albom" A.L. Kun (1871) consisting of four parts in ten volumes (historical, archaeological, ethnographic, trade) with 1200 photos; the first translation in Russian of classical works of the Uzbek literature "Shed ere-i-tjurk" ("Genealogical History of the Tatars") by Abdul-Gaza, Khan of Khiva (SPb., 1768); the first edition of Philipp Efremov's "Ten-year Travelling and Adventures in Bukharia, Khiva, Persia and India and Returning from there through England and Russia, Written by Himself" (SPb., 1785). The first newspapers printed in Turkestan are maintained in the library. They are as follows: "Turkestan vilojatining" (1870-1917), "Tid or" (1907), "Turan" (1919), "Sadoi Turkestan" (1914), "Ishttrakion" (1917), "Turkestanskije vedomosti" (1870-1917), "Samarkand" (1904-1907). Books in foreign and old Slavonic languages are stored in the library:

- Incunabulum "The Ninth German Bible". It belongs to the outstanding masterpieces of typographical art of the 15th century;

* Director, National Library of Uzbekistan, Chairman, Uzbekistan Library Association, Uzbekistan

- “The Oriental Library” by B. Erbelo is the original encyclopedia of the East issued in French in 1697;
- “Ostrozskaja Biblia” by I. Fedorov was published in Ostrog in 1582.

2 Present Status

In 2002 in accordance with the President’s decree “On the Improvement of the Organisation of Scientific Research Activity” the library received the official status of the National Library. Later the National Book Chamber joined the National Library. These changes aim at further development and improvement of librarianship with due regard for changes taking place in traditional library technology and services to users.

Every historical period in the progress of society made its alterations in the library structure, service system, in the work of the reading rooms changing the trends, functions and priorities. But the quality and energy in satisfying the informational requests of the users are the main and invariable aims of the assistance. The status of the National Library enhances the responsibility for improving library service.

During 135 years of its activity the library revised the trends of serving more than once. It depended on the social, economic and political events in the country.

3 Facilities Offered

Between 1970-1990 the main tendencies of the assistance to users are to open reading rooms in the newly founded departments and to widen reading rooms attached to the art department, rare book division, foreign language department and service division for young people. The National Library has become the coordinating centre of the interlibrary loan in the Republic. During these years the structure of the readers was varied and high in quantity, more than 35,000. The library successfully attended to all categories of users starting with 16 years.

There are nine specialised reading rooms for 300 persons at the readers’ disposal. Annual attendance is over 550,000 users, annual circulation is 1,700,000 publications.

The electronic catalogue database of the National Library contains more than 30,000 records accessible to readers. The project “Virtual Library.

Consortium of Uzbekistan Libraries for Making Up the Union Electronic Catalogue" is being realised. Its database is over 100,000 records.

The system of library service must respond to the changes in the informational requests of the users. For this purpose the readers have access to the electronic database and to Internet. For readers' convenience there is a reading room for 70 persons attached to the storage department supplied with computer techniques.

4 Main Objectives

The main objectives of the Uzbekistan National Library in the library service are:

To make use of traditional (printed) and electronic bearers of information.

To preserve traditional forms of service and to inculcate innovations.

To use information technology to the optimum.

To extend access to the national information resources not only for the readers within the library but also for the distant users.

5 Conclusion

Preserving the traditions, the NL is on the way to change. The stable development of the NL depends on the legal guarantees on the part of the state, the efforts of the staff and the help of the interested organisations including international bodies. The National Library of Uzbekistan will take its proper place in the commonwealth of the national libraries of the world.

National Bibliographic Control The Issues

H. K. Kaul*

1 Introduction

The very purpose of establishing national libraries was to possess and process at one place documents published in a country and make their bibliographic information available to users nationally and globally. Bibliotheque Nationale de France was the first library which was established for this purpose in France during the reign of Louis XI (1461-83). Thereafter there has been a gradual increase in the national libraries and by now about 150 countries have national libraries doing this work.

In order to promote this objective of the national libraries, and ensure that every book published in the country reached its national library the laws were enacted in order to ensure deposit of one or more books in a national library or a few more depository libraries in a country. The issue of the deposit of books in the national and other libraries in a historical perspective is being presented separately at this international conference but I would like to discuss measures briefly that ensure availability of bibliographic records of books published in a country when the legal methods of collecting books fail partially.

For instance in England in 1610, Sir Thomas Bodley entered into a private agreement with the book traders in London to get one copy of every new book free of charge. In 1662 a legal deposit in two other libraries was introduced which included the Royal Library and the University of Cambridge Library. In other countries as well the systems of legal deposits of books have their own histories, but the fact remains that in none of these libraries is every document published in a country completely stored and information thereof disseminated.

Before we discuss the measures necessary to promote bibliographic control it remains to be seen that no library on earth can accommodate

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every document published in a country. Therefore, the system of making of the libraries in a country as support libraries of the national library in an open environment becomes essential. Therefore the national collection is not only what exists in a national library but also what exists in all other libraries in a country. Therefore, it becomes important to see how then can we support the National Bibliographic Control in a country in an open environment.

National bibliographic control is primarily based on an effective legal deposit legislation, a national bibliography that is published and distributed regularly and a bibliographic agency that handles the operations of the national bibliographic control. We notice that in achieving effective bibliographic control, when either of these instruments malfunction, we fail to get effective results.

2 Publications

2.1 Printed Publications

All printed publications, published in the form of books, journals, reports and grey literature in a country do not reach its National Library. Some do not reach at all. Either because the book is costly, or only as many copies were printed for which the publisher had orders or also sometimes a new publisher may not know about the obligations of the delivery of Books Act. At times, the National Library may not have sufficient infrastructure to process every printed document that it receives and many documents remain in store for years. At the same time, many of the titles which reach the National Library are also purchased, obtained as a gift and processed by the libraries in a country. The National Library or other libraries are simply duplicating the effort, knowing surely well, that for some of such publications there is a larger demand or no demand. Therefore, there is a great need to evolve mechanisms for new and economic methods for better access.

2.2 Electronic Publications

The major problem in maintaining the bibliographic control of electronic publications are:

- a. How to safeguard the author's rights?
- b. How to safeguard publishers' rights? and
- c. How to stop misuse of electronic publications?

Documents of all sorts are regularly being published through the Internet. Thus it not only dilutes the effectiveness of good works but also makes it very difficult to select the best material on a subject. Although Search Engines on subjects are getting evolved, they are all subjective in nature.

The major issue remains here: Should a National Library be selective in nature for acquiring, cataloguing and publishing of bibliographic information of printed and electronic documents? Is it relevant in the Internet age?

3 Bibliographic Standards

For effective use of bibliographic records at the national and international levels it is very essential that the international standards are used in the creation of bibliographic/ catalogue records. In India DELNET, INFLIBNET and the National Library are promoting the use of MARC 21 format. Using of international bibliographic standards allow`s an institution to spend its resources on cataloguing properly, for otherwise we have noticed a great deal of effort, time and money are spent by institutions on recataloguing of their resources.

Since 1979 when work began on the creation of bibliographic standards concerted efforts have been made in this regard. Not only a common standard but also the use of the protocols that support the national bibliographic control especially for searching library catalogues, exchanging of catalogue records were developed. And, also standards were developed for copy cataloguing. Through the protocols we can also search remote systems and databases, etc.

In order to make National Bibliographic Control effective, a National Library needs to use Z39.50 which provides a single interface for information access to multiple and diverse resources which would include simple and sophisticated searching. Similarly other standards that support National Bibliographic Control, directly or indirectly, include:

Infrastructure Standards — NISO

ISO 10160 & ISO 10161: Interlibrary Loan Application Service Definition and Protocol Specification

ANSI/NISO Z39.83: Circulation Interchange Protocol (NCIP)

ANSI/NISO Z39.84: Syntax for the Digital Object Identifier - 2000

ANSI/NISO Z39.85: Dublin Core Metadata Element Set - 2001

ANSI/NISO Z39.88: The Open URL Framework for Context-Sensitive Services (2002)

ANSI/NISO Z39.89: The U.S. National Z39.50 Profile for Library Applications (2002)

Networked Reference Services (standards development underway)

MetaSearch Initiative (may lead to new standards activities)

For online documents the Dublin Core has emerged as the main international standard. This needs to be adopted and upgraded and the national libraries and the libraries that are cataloguing and digitising documents have to look into its efficacy.

4 Creation of Bibliographic Records

4.1 Current Acquisitions

Some of the national libraries have a backlog of books to be catalogued. The current acquisitions are increasing every day. The questions remain that in future, would the national libraries be able to:

- a. Catalogue in time everything that is published in their countries so that they can produce national bibliographies in time.
- b. Make a selection and then catalogue. If so, would that selection be considered appropriate?
- c. Would it be worthwhile to catalogue everything in spite of the fact that the published document may not be upto the mark?
- d. What would be the impact of library networks on this process? and
- e. What would be the impact of digitisation on this work?

There needs to be a debate generated on these issues.

4.2 Retrospective Conversion

Retrospective conversion work in the libraries and the national libraries is generally given to outside agencies. Frequently it has been noticed that the agencies do not maintain proper standards and often there are not qualified staff to cross-check the records prepared. What are the solutions in such cases?

4.3 Training

Retrospective conversion for creating MARC 21 records needs trained manpower. We have seen that the students coming out of the Departments of Library Science need a good deal of training before they can start creating MARC Records. Also, the working library professionals involved with the creation of catalogue records in machine readable form need training. There are costs involved in training and therefore the training should conform to global standards. The cataloguers not only need to know AACR II cataloguing rules fairly well, they should also be familiar with the MARC 21 and their applications in the software they are using.

5 National Bibliographic Agency

In many countries the national bibliographic agencies play a major role in helping the national libraries in getting the national bibliographies compiled and published. However, the progress of this work is subject to several factors such as the form in which the bibliography has to be produced, availability of authority records, standards, finance, manpower to execute the work, etc. The issues that arise here are:

- a. If the National Bibliographic Agency is a private agency and it decides to stop working as an agency owing to some reasons, how will a National Library behave?
- b. Should publishers or publishers' agency create records in machine-readable form and send them to the National Library against a fee or service? This could happen if the discounts given by publishers were reduced as a result of this service.
- c. Should libraries create standard records and send them to the National Library? Since the libraries do not have proper expertise with them this does not work.

5.1 Government Publications

Each government library should play a dual role, one for keeping with it in digital or physical or both forms every document which it produces and the other, forwarding one copy to the Central Depository of government publications. This dual role is very important. The Central Depository should have in digital form all publications available for research, reference and preservation purposes.

A digital version of all government publications should remain with the National Library for reference and preservation purposes. The types of

material should include reports, conference proceedings, press releases, guidelines, and grey literature.

5.2 Institutional Publications

The institutional publications come under the Delivery of Books Act. Each institution should conform to the regulations and if necessary Delivery of Books Act should get amended with a forceful clause in this regard. Also, as each institutions join library networks the network holding will reflect this type of material available with the institutions.

6 Collection of Documents

6.1 The Legal Deposit

There is a need for an efficient system for depositing books under the Delivery of Books Act, as often the publishers do not deposit every book with the depository libraries under the Act. As this subject is being handled in a separate paper in ICONLIS, I would simple like to stress upon the fact that the national bibliographic control is directly linked to the depository system. The more effective the depository system, more efficient can be the bibliographic control.

6.1.1 Legal Deposit of Electronic Documents

There is the need for the technology to grow to authenticate the users of electronic documents, have a system for depositing electronic documents with a depository. The system will work fine if the economic interests of authors and publishers of electronic documents are taken into consideration while keeping in view wide dissemination of necessary documents. Thus we need a high quality user environment for electronic information and a depository for storing and preserving electronic publications.

With regard to the online document, we have to define it and to find out how a legal deposit can work in such a case as every day new additions are made to online documents by the publishers. Therefore the other questions that concern us include:

1. For a globally accessible online database, does the term of a 'legal deposit' apply and who is responsible for this job?
2. Can only permission to a depository library to access the online database suffice?
3. Could not only the 'right of use' by a National Library to such online documents be enough?

4. What will be the obligation of international publishers of online documents towards each country in such a case?

7 National Bibliographic Database

A National Bibliographic Database is a bibliographic repository of a nation's cultural resource. It is essential for each country to compile it if they do not have other means of accessing bibliographic information of works available and published in a country. Such a database is a primary resource for research in any field pertaining to a country. Such a bibliographic database is of immense value to any scholar in the world.

Creation of bibliographic records in an internationally acceptable format such as MARC 21 needs to be done by all institutions that contribute records to the National Bibliographic Database. The question remains. Who should handle this, the National Library or a National Bibliographic Agency selected for this purpose? Is it essential to load the National Library with all such works? These are some of the questions which need to be addressed especially in an era when computer and communication technologies can help institutions in the processes of collection, organisation and dissemination of information. This will help the countries to be active partners in Universal Bibliographic Control and Universal Availability of Publications, the two major programmes of IFLA.

The National Bibliographic Database will include bibliographic records of old and recent books and other types of documents. It will facilitate the development of national bibliographic control. It would have the following advantages:

1. It will enable the research scholars to pursue their research without much difficulty.
2. It will be the accurate repository of the description of documents and their contents.
3. It can facilitate the sharing of catalogue records and make the cataloguing of books more efficient.
4. A major tool for resource sharing among Indian libraries. DELNET in India has already developed a Union Catalogue of Books of about 3 million books which are available among its libraries which are more than 725 in number.
5. It will give multi-dimensional access to documents on a subject, by an author, published in a region, published in a particular year, etc.

6. It will offers information about the location of each document.
7. It can serve as a Book Selection Tool.
8. It can be used as a guide for classification and cataloguing of documents.
9. It can help to identify the documents for preservation purposes.
10. It can act as a tool for developing metadata for full text publications.

7.1 The Pilot Projects

The Working Group on Libraries and Informatics of the Planning Commission for the Ninth Plan recommended that:

“Among the different city networks, it has been found that DELNET has emerged as an operational library network in India. It has developed online Union Catalogues of books and periodicals. It is recommended that DELNET be supported to create a National Database and develop on the OCLC pattern covering all subjects.”

In pursuance of the above recommendation DELNET submitted a proposal to the Planning Commission with a copy to the Department of Culture in July 1996. The proposal covered a period of five years from 1997-2002. DELNET planned to:

- i. provide training to library professionals in each state;
- ii. use the following international standards:
 - a. AACR II
 - b. MARC Format
 - c. Library of Congress Subject Headings
 - d. Creation of Thesaurus of Indian Terms
- iii. establish a countrywide programme for database creation for the National Bibliographic Database;
- iv. establish State Coordinating Agencies;
- v. establish the National Centre;
- vi. provide hardware and software to libraries with rich library collections; and
- vii. provide Internet access to participating libraries.

DELNET subsequently worked on the pilot projects and created 25,000 machine readable records each at:

1. International Institute of Tamil Studies, Chennai (English and Tamil Books)
2. Punjabi University, Patiala (English and Punjabi books)
3. Andhra University, Visakhapatnam (English and Telugu books)
4. Asiatic Society, Mumbai (English, Marathi, Sanskrit, etc.)
5. Asiatic Society, Kolkata (English and Bengali books)

7.2 Printed Publications

7.2.1 Grey Literature

There is no bibliographic control of grey literature (e.g. reports, conference papers, pamphlets, circulars, etc. at the national level. Such documents are published for limited use and distribution by institutions, government bodies, etc. The National Library should have some bibliographic control over the best important works in this field. This could be done in cooperation with the institutions and government agencies by the national libraries.

7.3 Electronic Publications

Should electronic publications be part of the National Bibliographic Database? Yes they should, except online databases. It may not be possible for the publishers of electronic publications to give more than one copy of each work, provided also that such a work is not disseminated widely among the public so that the publisher loses royalty.

The issues that need to be looked into in electronic documents for NBD purposes are classification of such documents according to their geographical origin, language of text, author's country; and the subject or subjects dealt with.

At the same time, if we want electronic materials to be widely used by a large number of users, information about them needs to be disseminated as fast as possible so as to attract the attention of their publishers. Issues such as downloading also need to be investigated. It was generally considered that national libraries should be the main repository for electronic publications.

7.3.1 Archiving Digital Resources

In order to establish National Bibliographic Control both in distributed and centralised ways, it is important that proper standards and technologies

are used for archiving of digital resources. The issues that concern us to day include:

1. Examination of the life-cycle of digital resources;
2. Best archiving methods;
3. The costs involved; Recovering of digital material from damage and unforeseen developments.

8 Retrieval of Information

8.1 National Bibliography

In the era of digitisation and the Internet, the publication of the National Bibliography is not enough. It has to be widely disseminated. It is largely through the processes of digitisation and the Internet that the bibliography can reach millions of people fast. There is a lot of duplication taking place in creating a National Bibliography and the National Bibliographic database. This needs to be avoided. Yet the questions such as the relationship between the National Bibliography and the National Bibliographic Database needs to be settled.

Making of national bibliographies which are Unicode based, covering all languages is essential. The authority files maintained in a National Bibliographic Database need to be done at the national level. This is not being done in South Asia. Also, better automatic indexing facilities will be required for such databases.

I am sure that the issues listed above will be discussed to find solutions that will help the national libraries.

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Bibliographic Control in the 21st Century: Need for Common International Standards

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1 Introduction

Libraries are, by far, the most important institutions for the development of any nation. They can be described as the backbone of the development activities of a nation. Libraries provide a support system for research and development activities. The collections of any library are its assets and the older this collection gets it becomes a heritage. These heritage assets are comparable to any other historical and cultural assets of a country. The value of the library's collection cannot always be determined in terms of money. A publication may have been purchased by the library in 1930 for Rs. 5 but if the library happens to lose the publication today it will not be right to say that the loss only amounts to Rs. 5. The loss is much bigger in terms of scholarship and research because what has been lost is not a book but a valuable tract of that period, and the loss is permanent since that publication may not even be available any more. Hence, a proper control on the collections is absolutely essential. Broadly there can be four controls for the collections in any library set up:

- Inventory control,
- Bibliographic control,
- Physical control (or the physical security of the collection), and
- Preservation (or the control against deterioration).

2 Bibliographic Control

Bibliographic control is the most permanent control that can be exercised on a library's collection. Bibliographic control is the set of operations involved in identifying documents themselves, as distinguished from operations directed towards identifying the needs of users of the documents. Bibliographic control is a statement about the development and maintenance of a system, of adequate recording of all forms of material

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published and unpublished, printed, audio-visual or otherwise, which add to the sum of human knowledge and information. Bibliographic control is essential for the optimum use of recorded knowledge. The term thus relates to what is generally described in the library's administrative organisation as the technical services, as distinguished from the public services. Bibliographic control bridges the two – it enables people to identify the existence of documents useful for their purposes by using indexed lists of documents. It is at the centre of the information professions, both supporting and being supported by other functions like collection development, interlibrary loan, and reference services.

The functions of bibliographic control can be stated as:

- (a) identifying the existence of all possible documents produced in every physical medium
- (b) identifying the works contained within these documents or as parts of them
- (c) producing lists of these documents and works prepared according to standard rules for citation
- (d) providing some means of locating a copy of each document in a library or other accessible collection

Bibliographic control does not necessarily imply the application of computer technology to the above tasks, but in practice the computer is certainly the appropriate technology for the purpose. Libraries pursue the goal of bibliographic control primarily by organising information about the documents they collect. The process is still usually called cataloguing, a word increasingly limiting and antiquated as a description of what now happens in the new and broader context. Cataloguing can be termed as the backbone of all library operations. None of the library's functions can be effective if the cataloguing is not done in a standard form. Collection development, circulation and reference services all rely heavily on the bibliographic record created through the process of cataloguing. And this becomes all the more true when the library has a large collection. Cataloguing is the process through which any document in the library is made unique, identifiable and retrievable. It is the process by which a library can build, serve and interpret its collections.

Basically in a catalogue the patron can find two important pieces of information: whether the library has the item wanted, and, if so, where it is located in the collection. The main functions of a library catalogue are to

enable a patron to determine whether a library contains a certain item, which works by a particular author are in the collection, which editions of a particular work the library has, and what materials the library has on a particular subject.

An effective catalogue in any format should possess certain qualities that will allow it to be easily consulted and maintained. If it is too difficult, too cumbersome, or too expensive, it is virtually useless. To begin with, a catalogue should be flexible and up-to-date. A library's collection is constantly changing. Since the catalogue is a record of what is available in that library, it should be possible for entries to be added or removed as books are added to or discarded from the collection. Second, a catalogue should be constructed so that all entries can be quickly and easily found. This is a matter of labelling, filing, and, in the case of online catalogues, simple and clear access codes. Third, a catalogue should be economically prepared and maintained. The catalogue that can be prepared most inexpensively and with greatest attention to currency has obvious advantages. Fourth, a catalogue should be compact. It should not only take up the least possible amount of space, but it should also be easily removable for consultation and prolonged study if possible.

3 Why Standardise?

Standards are fundamental to many aspects of modern life, including science, technology, health, and education. Standards and specifications are documents that stipulate or recommend

- minimum levels of performance and quality
- optimal conditions and procedures for operations – including distribution and utilisation of materials and services.

Standards are essential to ensure reproducibility of research and the accuracy of reliability of the research results. Standards are essential for a number of reasons

- to prevent avoidable wastage of resources and manpower;
- to enhance productivity;
- to ensure uniformity, reliability, and quality;
- to achieve overall efficiency and economy.

A standard has been defined by the American National Standards Institute as a specification accepted by recognised authority as the most practical and appropriate current solution of a recurring problem.

A standard provides

- a unified structure,
- a statement of minimum expectations, and
- guidelines to determine when absolute uniformity in execution is essential and when it is not.

Library practices are based on standardised methods of description based on the data elements and the provision of access points. It can be argued that it is not hard to recognise a series statement that precedes an imprint in a citation even if library cataloguing rules would locate it after the collation. Similarly it can be argued that in a computer set-up one can write a program in a number of ways for an independent computer-based system and still achieve the desired result. However, if common basic practices are applied in producing different files or in using different systems to maintain and search them, then

- records can be interchanged among them,
- a person consulting more than one such file becomes familiar with the pattern and can more easily find and interpret the relevant data, and
- the same programs can be used to process records coming from various sources.

Standardisation thus results in

- avoiding duplication of effort,
- savings in terms of time and manpower,
- enhanced cooperation amongst libraries,
- establishing effective networks, and
- better services to the user.

It is quite evident that there are more advantages than disadvantages to standardisation and eventually one particular practice gains overwhelming favour while its competitors wither from disuse. When consensus is well advanced in a particular area, the prevailing practice is usually codified formally by a representative committee of practitioners who ensure that it is stated as clearly and comprehensively as possible. This codification is a standard, whether it is formally ratified by an officially recognised body or only informally but widely implemented in practice.

Variations in bibliographic practices in different countries or among quite separate user groups are justified when their worlds remain separate or they operate within their own narrow setup. This way these libraries can satisfy their own users reasonably effectively. But the question is – is it enough for any library to be satisfied in satisfying their own users, which may be a few thousands? Or in other words is it justified to have spent a lot of money on collection development and on manpower and then limit the use of these resources to a few thousand users when there may be thousands of more that can benefit from the same collection.

And the only sensible answer to these questions is a big, emphatic no! No library in today's world can operate within itself. When the costs of collection development, of running a library are so high, no library can afford to be independent. In doing so it will not only limit the use of its own materials but also do a disservice to its own clientele by limiting them to its own materials. Further, the use of the computer has made standardisation even more important than before. The integrating computer has made a global village of the whole bibliographic world. The sheer cost of redundant programming would have imposed common standards and practices even if record sharing were not imperative.

In today's world no library can be or claim to be self-sufficient due to financial constraints vis-à-vis the increasing prices of published material. The recognition of this fact is one of the most important factors, which have led various libraries to evolve and participate in networks, which are mutually beneficial. In the network atmosphere bibliographic control works in the same way as in any single library but acquires larger proportion by virtue of the size of the collection. However, the need for standardisation or, in other words, the need for following standard practices in creating bibliographic records increases manifold. The use of computers makes networking more effective and efficient. Standardisation is a prerequisite for smooth operations in any setup, large or small. In a library too the same is true. Standard practices are required in all library operations – collection development, circulation, and more so in cataloguing.

To adhere to the purpose of maintaining a standard catalogue every library needs to follow certain rules known as cataloguing rules. Uniformity is necessary in the form of the catalogue record. If certain standards are followed throughout, patrons will universally recognise all the elements that make up the record. They will know, for example, that the publisher information will always follow the rest of the body of the entry and that the

physical description area consists of certain items arranged in a specific order. This information then becomes readily identifiable.

Consistency and standardisation are the key words in cataloguing. Consistency is important from the user point of view and standardisation is important from the point of view of the library profession.

Standardisation of bibliographic information is very important in this age of growing libraries with growing budget cuts and growing demands. Standardisation helps promoting predictability of retrieval, as opposed to guesswork, promoting serendipity in retrieval, and promoting depth of access to books.

It is no more possible for any library to work independently in a vacuum. No library can think of being self-reliant and also claim to satisfy their users. Interdependency of libraries has to be acknowledged and made the best use of if the libraries want to serve the users effectively and efficiently. A small library with, may be a small, but excellent collection satisfied by serving a few users but functioning in a vacuum is in fact doing a disservice to the large research community who do not know of its collection. It is of utmost importance that libraries come out and advertise their collection instead of being content with their small clientele. Resource sharing and shared collection development relies heavily on standard bibliographic formats. Resource sharing is not possible without bibliographic access—that is knowledge of what is available for sharing from other sites through such means as union catalogues or bibliographic utilities. And there will be no reliable retrieval if these union catalogues or bibliographic utilities do not follow a standard format. Hence, a standard format is an essential part of the infrastructure required for effective resource sharing and shared collection development. The well-known and universally used commercial services – i.e. *OCLC*, *RLG*, and *WLN* – were at first a byproduct of very large scale shared cataloguing activities.

Another advantage of standardisation of bibliographic information is that it facilitates copy cataloguing which is a recognised way of economical cataloguing. A library can make use of the work already done by another library by copying the bibliographic record and make a few changes to the record if needed. This is another kind of sharing amongst libraries.

The cataloguing process is divided into two phases – Descriptive cataloguing and Subject cataloguing. Descriptive cataloguing is that phase of the cataloguing process which is concerned with the identification and

description of an item, the recording of this information in the form of a cataloguing record, and the selection and formatting of access points -with the exception of subject access points. The term refers to the physical make-up of the item and to the responsibility for intellectual contents, without reference to its classification by subject or to the assignment of subject headings, both of which are the province of subject cataloguing.

Identification and description are closely interrelated processes in cataloguing. In descriptive cataloguing identification consists of the choice of conventional elements, formulated by a set of rules that cataloguers use to describe an item. When the cataloguer has properly identified these data elements, they are described in a catalogue record in such a fashion that the description is unique and can be applied to no other item in the collection.

4 Data Elements

The detailed elements that make up that comprehensive and authoritative bibliographic record include all the information about the publication, which may be required to fulfil any of the functions of library or information services. The elements of bibliographic data, which together identify a document, are the building blocks of bibliographic control. They include the familiar data found in any citation, for example, author's name, title, publisher, date, and more esoteric information encountered less frequently. In general data elements serve:

- To identify a particular document uniquely in order to distinguish it from others
- To show how two or more documents are associated with one another
- To provide the basis for access points which enable a searcher to locate the record of a document in a file

The access points relate to:

- objective facts about the documents itself (for example, its title or the fact that it constitutes the proceedings of a conference)
- the topic(s) and concept(s) treated in its intellectual content; simplistically, the subject(s) of the document.

Value judgments have no place in bibliographic control. The price of an item at the time of its publication is an element of bibliographic data since it can help identify a particular issue or format of the publication; a judgment that the item is or is not worth the price is bibliographically

irrelevant. Similarly, the title is described to name (and thus identify) the document itself in the same objective way as a personal name identifies the person in a passport. The whim of the bibliographer has no place in determining bibliographic data. They are transcribed from, or objectively based on, tangible evidences in the document itself. Subjective judgment and ad hoc judgment can have a place in determining bibliographic data when the objective evidence is ambiguous – but not to the extent of ignoring or distorting that evidence. For example, although the publisher fixes the wording and layout of the title page, it is the cataloguer, a person with experience of how titles are used for bibliographic purposes, who must decide how the objective evidence best fits into the items bibliographic record.

The most important data elements used in a bibliographic record are:

Titles(s): The title may be defined as the chief name of an item. An authoritative statement of a book's title is expected on its title page but a different one may appear on its cover, spine, running heads, etc. Hence, a bibliographic record may have a main title and one or more other titles.

Responsibility for the Intellectual Content: Every publication has one or more persons responsible for the contents of the publication, or in other words. This responsibility may lie with a person(s) in his capacity as an author, editor, compiler, illustrator, photographer, or with a corporate body(s) acting as publishers, sponsors, conference sites, etc.

Publication/Distribution/Manufacturing Data: Publication information, like most other bibliographic data, is of value in identifying both the content and the document. Despite the existence of many multinational houses, publishing is still largely a reflection of the culture of a place. Identifying that place therefore alerts a reference librarian or selector to a possible national or regional emphasis. The publisher's name may also guarantee quality standards (or warn of a lack thereof) and indicate a point of view or emphasis on a subject specialty. For these purposes, publication information is permanently useful even if the item can no longer be obtained from the originating publisher.

Date: Several types of dates may be pertinent to works and publications, all normally expressed in a citation only as a year. Some of the kind of dates may be the date of publication, date of subsequent edition, reprint date, copyright date, etc. In a bibliographic record more than one date may be included as long as it is clear which one relates to which function.

Terms of Availability: Data relating to price, conditions of sale or distribution, etc. are valuable additions to records intended to aid in the selection and acquisition of newly published items.

Physical Characteristics: The count and description of the material pieces composing a document helps distinguishing documents from one another and provides information for the practical needs of conserving collections and restring damaged items. An object's medium (paper, acetate, etc.), the number of its component parts (pages, frames, reels, pieces, etc.), and the method by which they are assembled (binding, container, etc.) are its basic physical characteristics.

Relationship with Other Items: The most common, easy-to-express, and important bibliographic relationships, those stated in most citations and catalogue records, are normally revealed within the document itself. They are the relationships among editions of the same work; sequels, continuations, etc.; items both physically and bibliographically separate from one another but issued and intended to be used together; important separately identifiable work contained within one publication; and items in the same series.

Edition: An edition is most basically defined as the total number of copies of a publication produced from the same master copy by the same publisher. There is an implication of change in intellectual content between different editions, but the change can range from almost total to a few barely noticeable corrections. The cataloguer neither can nor should attempt to count the quantity or judge the significance of changes between editions.

Accompanying Items: A book and a sound recording can be brought together and sold as a unit. So can a teacher's manual and a language text. Statistical tables on a microfiche can be inserted in a pocket affixed to the inner cover of a study of economics or a pocket containing a map may be tipped onto the flyleaf of a travel book. Each item has different physical characteristics to be recorded, and the fact that they have been brought together as a unit requires that their relationship to one another be noted.

Contents: Most longer writing is divided into volumes or parts, musical compositions into movements, plays into acts, etc. Such divisions of a work have no bibliographic significance if they are never published separately or likely to be separately sought. But the parts of some works do have their own identity and are sometimes separately published and studied. Such parts need to be recorded in the bibliographic record. This can be taken care of by way of contents note, analytic records, or multilevel description.

Series: A publisher creates a series by giving the same title to each publication in a group. A series title is useful to identify the item wanted in a request like “Give me the Everyman’s Library edition of Chaucer” and / or to find an item for the person who knows its series title but not its individual title.

Subject Headings: One or more subject headings are assigned to describe the subject content of the material being catalogued. This approach helps the scholar looking for material on a particular topic when he/she does not have the specific information about an item or is not looking for a specific item.

5 Standards for Bibliographic Control

The selection of these elements and the way in which they are presented have evolved from the careful work of experts—cataloguers, librarians, bibliographers—over long periods of professional activity in preparing cataloguing rules, classification schemes, etc.

Similarly, the even more demanding task of drafting the variety of international standards required for all aspects in the preparation and production of the comprehensive record has been undertaken by cataloguers and bibliographers and other experts working together in small international groups or at larger international conferences, usually under the auspices of one or other of the international organisations involved in “standard setting”—ISO, UNESCO, or IFLA.

In the past, efforts to achieve international standards have often been whittled down at the national level because the needs of national users have seemed more important than the usefulness of conforming. One early criticism since refuted related to a possible conflict between the record prepared for the national bibliography and that required for the national collection (i.e. the national library). The functions of the two organisations are different, hence a presumption that the records should reflect that difference. But a truly comprehensive record should, as already noted, cover the requirements of all library functions and services. This was stated clearly and succinctly in the report prepared in 1971 in the United Kingdom relating to the integration of the various library organisations which became the British Library: In specifying the requirements for the new British Library record, it was stated that:

... it is reasonable to suggest that all the bibliographical records created in the future by the British Library should be based on a single

comprehensive formula, which would provide a place for each category of data required by any of the Library's functions and a uniform set of rules for the form in which the data in each category are recorded.

There is also a certain measure of uncertainty in recognising exactly what is a standard. "The term is currently used very broadly to describe various categories of documents— those which are international standards prepared and published by ISO (for bibliographic standards, those produced under the auspices of ISO/TC46), or are "nominative" documents, or are *de facto* standards. There are other manuals which are not standards but do represent accepted standard practices, for example, a catalogue code, such as the *Anglo-American Cataloguing Rules* (AACR), which is in use internationally.

It is certainly true that the demand for and the preparation of international bibliographic tools increased in the 1970s, to become something of an "upheaval" by the end of that decade. The plea for standardisation has echoed throughout the information community. The papers of the International Symposium on Information Systems sponsored by UNESCO, FAO, and IAEA held in Verna in 1974 reflect the increasing concern of international information systems in applying standards, ensuring compatibility, and avoiding duplication, all in the interests of effectiveness and economy. Six years later in the foreword to another publication, the product of a UNESCO working group, the *UNISIST Guide to Standards for Information Handling*, some of the same sentiments are reiterated:

Standards promote overall economy of human effort in information handling, the interchangeability of blocks of information, and provide assistance in reducing, or even eliminating, economic and technical barriers to information; standards represent the very fabric of interconnection, and useful interconnection is impossible without them.... Standards can also improve the quality of information services. Once a good set of standards is adopted, it represents a powerful incentive to meet a certain level of quality consistently.... Ultimately, it is probable that financial considerations will dictate the solution of international standardisation, because only then does the sharing of resources at many levels become feasible.... Complementary to the drafting of standards is the establishment of appropriate methods for their promotion, distribution, application and use. Specialists and decision-makers, particularly in developing countries, need to be motivated to use or to introduce standardised methods and techniques and to participate actively in their preparation.

From its definition it is apparent that a comprehensive record must include all the data elements described above for bibliographic research (relationship of book to work, title-page title to other titles. etc.) and for selection and acquisition (indication of subject content, identification of particular items, means of obtaining item, etc.). And it is also apparent that when we talk of standardisation or standardised records we are talking about describing these elements in a standard format. In other words, we are talking of standards, which would ensure consistency in descriptive as well as subject cataloguing. Further, we are talking about standards, which would ensure consistency in formatting a bibliographic record for the machine. The preparation of bibliographic records, the intellectual process of cataloguing the item in hand, takes place in every organisation, large and small, wherever materials of information content are collected and organised systematically in order to serve the educational, research, or recreational needs of users. Over two centuries cataloguing has been subject to many controls and standards in the form of cataloguing rules, prepared within a library or drawn up by a group of librarians or information workers, and designed to ensure consistency and maximum retrieval efficiency within a library or information service or throughout a library system. The international approach to the preparation of bibliographic records is more recent, and it is less than 30 years since the first limited inquiry was made to see whether there were any common bases for agreement among the major existing cataloguing codes used for creating standard bibliographic records.

The first major cataloguing code to have evolved was Charles Ammi Cutter's 1876 Rules for a dictionary catalogue. This was followed by the 1908 American and British editions of Catalogue Rules, Author and Title entries; 1941 A.L.A. Cataloguing Rules, Author and Title entries; 1967 American and British edition of Anglo-American Cataloguing Rules followed by the 1978 and the 1988 revisions. In India the Classified Cataloguing Code was developed by S.R. Ranganathan.

In October 1961, the International Conference on Cataloguing Principles (ICCP) held in Paris successfully reconciled many of the differences among Anglo-American, French, German, and other cataloguing traditions in as much as they affect name and/or title access to records in library catalogues. The result of the conference were the twelve principles that form the basis of the English language code named the Anglo-American Cataloguing Rules whose first edition (AACR1) appeared in 1967, followed by a considerably refined second edition (AACR2) in 1978 and a revision

of the latter in 1988 (AACR2R). No rules can serve their purpose if they remain static forever. All rules must be re-examined and some changed from time to time because of changing purpose of the catalogue, changing technologies, and changing conventions in how people, corporate bodies, and governments choose to name themselves. Hence, the rules that could not develop or keep up with time became redundant. Anglo-American Cataloguing Rules have evolved as the standard code universally by virtue of the inertia of the large and long-established research library catalogues and the continuing interest in its development with time. The AACR also incorporated into its text the International Standard Bibliographic Description of Monographs (ISBD).

The data elements, and standards for these, can be grouped in four broad categories:

1. Those that relate to authorship (intellectual responsibility for the work, correct form of authors' names, etc.): *the heading*
2. Those that describe the item, including its physical form (pagination, binding, etc.): *the description*
3. The unique identification of the item: *international numbering schemes*
4. Those relating to its subject content, its functions, etc.: *the subject approach*

6 The Heading

The term "Heading" encompasses within its purview all personal name headings, corporate bodies, place names, and works. Rules for establishing the heading or in other words the name access points have been formulated and followed in libraries throughout the world. The need for standardisation was recognised almost a century ago in the English-speaking world where common rules have been followed for this purpose. These rules, developed through United States/United Kingdom co-operation, have spread to many non-English-speaking countries. At the same time, somewhat differing cataloguing traditions were also developed, for example, those in France and Germany as also in India.

Because librarians have considered the major objectives of the library catalogue to be the indication of which books of a particular author and which editions of a particular work are in the library's collection, their efforts towards standardisation concentrated first on the problems of

responsibility for the work— that is, the heading under which the record should be made and what should be the form in which the heading should be made.

In the 20 years after the ICCP more than 20 national and multinational cataloguing codes were formulated based on the Statement of Principles—the “Paris Principles.” An examination of the further resolutions of the conference shows the progress made since 1961 in three problem areas first discussed at the ICCP and re-examined at the International Conference of Cataloguing Experts, 1969— personal names, corporate bodies, lists of uniform headings for particular categories of works. In one area the ICCP showed clearly in its discussions and its statement that an international approach is not valid. Section 12 of the Statement of Principles, Entry Word for Personal Names, stated:

When the name of a personal author consists of several words(s) the choice of entry word is determined so far as possible by agreed usage in the country of which the author is a citizen, or, if this is not possible by agreed usage in the language, which he generally uses.

That is, the solution to the problems of authors’ names must be sought nationally, and not internationally. From this follows the recommendation that each national bibliographic agency accept the responsibility for establishing authoritative lists of the names of its country’s personal authors. Since the uniform application of the ICCP principle required authoritative statements of national usages, its resolution IVA (I) called for *the publication with the minimum of delay of a statement of the practice approved in each country for the entry of personal names of its nationals.*

The resulting publication, *Names of persons*, was based on information supplied by country representatives, with the aim to give guidance to cataloguers who are not language specialists on the name patterns in a wide variety of countries. The results of that ICCP resolution and the consequent publication of three editions of *Names of Persons* have also been of value in stimulating study and in finding standard solutions at the national level. In many countries where usage and patterns of names have been flexible, the initiative has been taken by national library associations or national cataloguing committees to examine the basis and historical evolution of national name patterns and to draw up rules for the entry of names of national authors. The entries in the 1977 edition of *Names of Persons* and in its 1980 *Supplement* provide evidence for a number of African and Asian countries that some consistency in name patterns has now been identified and distinguished.

One of the major achievements of the ICCP was considered in the early 1960s to be the acceptance of the principle of corporate entry and recognition that a corporate body could be considered responsible for an intellectual effort. But this decision in principle was not followed by further agreement in defining “a corporate body for catalogue purposes” or in determining a standard method for establishing corporate body headings. It was because the whole problem was left in abeyance, with the prospect of further divergence that Dr. Eva Verona was invited to examine further the problem of corporate body as author, to consider the concept of corporate authorship, and to establish principles for the form and structure of corporate headings. The results of her study, published in 1975 as *Corporate Headings* has proved a definitive work on the subject and has also served as a basis for further international endeavours. The recommendations of the IFLA working group set up to examine the form and structure of corporate headings were published in 1980 and these influenced not only new cataloguing codes but also new authority lists.

It is in this area of establishing authority files and authority systems (which may or may not be in mechanised form) that major endeavours were directed in future, and it was anticipated that such files or systems might be either national or international in scope and content. The basis here was the national contribution made in accordance with international standards, accepted and acceptable. It was agreed that it is the responsibility of the national bibliographic agency to maintain an authority file, not only for personal authors but also for corporate bodies, ministries, institutions, and other official organs within a country.

The concept of the authority file was stretched further to include conference proceedings, uniform titles, etc. AACR2 incorporated all these recommendations and provided a guideline for establishing personal names, corporate bodies, uniform titles, and geographic names in a standardised form based on the above principles. AACR2 also incorporated the specific and unique features of the personal names, religious texts in languages other than English like Burmese, Karen, Arabic, etc. and of countries like India, Indonesia, China, etc.

The name authority work for use in a standardised bibliographic record involves the following:

1. determining all the names, including all their variant forms, which have actually been used in documents to identify the individual person, body, place, or work at issue

2. choosing one of these (if more than one exist) as a preferred name or form to act as the primary identifier of the person, body, etc.
3. presenting the preferred name or form in such a way that it can be most readily located in an alphanumeric file and most surely distinguished from all other names in the same file and
4. either
 - a) (in a manual file): linking all other names or forms under which a user might reasonably look for the person, body, etc. to the preferred form by means of visible cross-references
 - or
 - b) (in an interactive file): linking all relevant access points for the same person, body etc. —preferred and non-preferred— directly to each bibliographic record involving that person, body, etc.

7 The Description

International efforts in reaching agreement on choice and form of headings have been complemented by remarkable progress in establishing international standards for descriptive cataloguing.

The IMCE, International Conference on Cataloguing held in Copenhagen in 1969 established the basis for internationally uniform descriptive cataloguing practices. At that meeting a working group was set up with its task to develop an International Standard Bibliographic Description (ISBD). The first edition of this was published at the end of 1971 and was introduced into some national bibliographies at the beginning of 1972. In the course of the next few years a number of other IFLA working groups were established to develop further ISBDS.

Indeed, IFLA's major contribution to the standardisation of bibliographic practices has been the preparation of the ISBDs. These now constitute a range of specialized texts devoted to particular materials, and all are compatible with the framework of the General ISBD [ISBD (G)]. The history of the ISBDs—aspects of which have been controversial, particularly within the American library community—has been well documented in library literature, in *IFLA Journal and International Cataloguing*, and a bibliography dealing entirely with ISBD citations has been published.

The ISBDs available in published form (as of 1981) are:

ISBD (M) (Monographs), first standard edition revised 1978

ISBD (S) (Serials), first standard edition 1977

ISBD (G) (General), 1977

ISBD (CM) (Cartographic Materials), 1977

ISBD (NBM) (Non-Book Materials), 1977

ISBD (A) (Antiquarian), 1980

ISBD (PM) (Printed Music), 1980

The distinctive feature of the ISBDs —that is, that the descriptive information is taken from the item itself in the form in which it is presented in that item—has been recognised as the most economical and more certain way of ensuring compatibility in bibliographic recording. The use of the ISBDs has lessened the importance of traditional differences in cataloguing practices and catalogue codes related to choice and form of headings, names of authors, etc. It has also been recognised as the basis for making library-produced records compatible with those of organisations in the abstracting and information communities. The future development for the international exchange of bibliographic records can be envisaged as a system which is flexible, economical, and catalogue code independent: that is, records made in accordance with the ISBDs, making use of structured authority control systems.

That the ISBDs have already been adopted by and introduced into at least 10 national and multinational cataloguing codes is a measure of their acceptance worldwide and of the recognition of their universal applicability. Among the codes in which the stipulations for descriptive cataloguing are ISBD based are the *Anglo American Cataloguing Rules* (AACR2), 1978; the German cataloguing rules, the *Regeln für die alphabetische Katalogisierung* (RAK), 1977; and the *Nippon Cataloguing Rules*, 1977, prepared by the Japan Library Association. There are also translations of ISBD texts into 15 languages.

8 The Subject

The subject approach is the most difficult area of a bibliographic record in which to exercise control for the simple reason that it is the only area where the catalogueuer has room for subjectivity. Also, the national bibliographic agency, in accepting the responsibility for making the authoritative bibliographic record in accordance with international standards,

has still to maintain a balance between the demands at the national level and the advantages and requirements of international exchange. This conflict of interests is most apparent in considering subject analysis and identification. Indication of subject content is that element of the bibliographic record, which requires the most intellectual attention and receives the most varied treatment. The emphasis is very much on national requirements, differing functions, and users' needs. There are also the universal problems of changing approaches to knowledge, variations in subject development, and alterations in word meanings. The mechanisms of subject analysis are not static and cannot be consistent over a long period of time. This was clearly expressed by Dr. Herbert Coblans:

Every generation must organize knowledge in a meaningful way, preferably in some internationally acceptable form, if they are to be able to serve their clients properly. Excessive specialisation on the one hand, and the growth of border disciplines on the other hand, make this even more imperative.

The difficulty is to find the internationally acceptable form. It could be presumed that, in lieu of subject headings, the adoption of a universal system of classification linked with numerical or alphanumerical tables could solve the problems of international understanding of subject content. But again, classification systems have a philosophical basis. Some have been evolved to fulfil special functions and have then become general. The Library of Congress schedules make up just such a scheme, which has wide acceptance in North America and in academic libraries in other parts of the world but not in Europe.

The Dewey Decimal Classification (DDC) scheme similarly has had wide acceptance in North America and other parts of the world, more particularly in public libraries, but not in Europe; and it has been considered to have neither the basis nor sufficient specificity for detailed subject analysis. For this purpose the Universal Decimal Classification (UDC), with its wide acceptance in Europe, might seem to be the best scheme to put forward for use internationally. But UDC has not been regarded favourably by the specialist secondary services, many of which have been occupied in creating their own subject identification schemes, designed specifically for the indexing and abstracting services and planned to be hospitable to machine manipulation.

Librarians in the meantime continue to exchange bibliographic records and continue to require knowledge of subject content. Rather than awaiting the development of new schemes of classification or alternative methods

of subject approach, the trend in recent years has seemed to be in the direction of improving the applicability of existing schemes. This has been particularly noticeable with the DDC, where policy decisions have resulted in a wider geographic and cultural input to the revision of the schedules. As a consequence, the strong North American bias in the scheme, which was the major factor militating against its use in an international context, is slowly waning. Librarians in Singapore, Iran, Australia, and Latin American countries have contributed to the latest editions of DDC. This is not to say that DDC could be considered as an international classification scheme. At the 1977 International Congress the participants in the discussion of the subject approach in national bibliographies, while fully appreciative of the advantage of a classified arrangement for the printed issues, did not believe that it was possible to recommend any one scheme.

As far as the subject headings are concerned libraries need to distinguish between natural language indexing and a controlled vocabulary. In today's automated world it is considered very useful, even indispensable, to be able to search for natural language words at least in titles and subtitles. Indexing these is no longer the labour-intensive work it once was. Automated indexing depends on the availability in machine-readable form of the database to be indexed. However, the limitations of a natural-language access system are at first less visible than its ease and copious results. They are certainly underemphasised by commercial vendors of computer-based title and full text indexing services. That these provide no cross-references linking variant terms for the same concept is taken for granted: one must search synonyms separately. It is a greater disadvantage not to have links among related concepts. At their present stage of development, the techniques of both automated indexing and natural-language searching, which are two faces of the same coin, are excellent tools for *document retrieval*, that is for locating a particular document known to exist or just any relevant document. However, they are blunt tools to use for *information retrieval*, except possibly in a limited subject fields whose natural language approximates a controlled vocabulary. Their primary virtues are low cost and a sense of immediacy in the user's approach to the database.

A controlled subject vocabulary does not permit this sense of immediacy. It is rather, a mediator—some would say a barrier—between the searcher and the database. The four functions of a controlled subject vocabulary are:

- 1) to standardise which of two (or more) to prefer as the access point for a given topic

- 2) to determine the preferred lead term, or access element, when a single topic can only be expressed as a multi-word combination
- 3) to provide explicit links among equivalent terms and among both hierarchically and associatively related terms
- 4) to determine whether and how two or more conceptually separate topics should be linked in a single pre-coordinated access point.

Not every vocabulary accomplishes or even undertakes all four functions. The first is the most obvious one. It illustrates the very fine line between natural language indexing and the use of a vocabulary. The second function comes as naturally as thinking about which element of a personal or corporate name should be its access element. The third and fourth functions, linking and coordination, deal with the processes of logical arrangement. The Library of Congress is the oldest and best-known example of this type of vocabulary and is functionally described as a pre-coordinating vocabulary. Whether the Library of Congress Subject headings or any other vocabulary, controlled vocabulary is the only answer for providing subject access in standardised bibliographic records.

9 Machine-Readable Bibliographic Records

The concept of Bibliographic Control, the ideal of the total system of similar bibliographic records available for use and exchange, can be visualised more easily—and can even be anticipated—when those records are in machine-readable form. Equally, it is true, that it was the introduction of the computer into library processes that opened up the possibility of establishing an operational communications network and hastened the demand for international bibliographic standards. In the best of all possible library worlds the computer would be at hand as an aid to all national bibliographic agencies in creating their national records ready and available for circulation throughout the network.

The pattern for the future is the creation of national bibliographic agencies with comprehensive computer-based systems for controlling internal operations, producing national bibliographic records and transmitting and receiving bibliographic information in national, regional, and international networks. It must be recognised that the establishment of such agencies requires economic and technical resources. Also, very basically, it requires librarians who have an effective knowledge of computers and systems designers with experience of the complex and manipulative systems that characterise bibliographic processes. There must

be recognition of the extent of learning and the depth of understanding required for the most effective use of new technology. The future with the computer will need more and more librarians to learn and to go on learning; and it may be considered no mean advantage if that learning is done with the objective of national participation in an international communications network.

This, in turn, must be put into perspective. The computer is a tool; automation is a process of management. At no stage can it be accepted or implied that the computer does other than implement the judgment decisions of librarians, or that the installation of an automated system will solve immediately all problems of information recording and retrieval. Computers are able to process information more efficiently than humans, and telecommunications links are able to make information more readily available: With these two facts as their base librarians must be prepared to discipline themselves to the computers' limitations and to discipline computers to their needs.

For effective bibliographic control in today's set-up there is the need to create a machine record in one automated system in such a way that it can be immediately available and usable in automated library systems in other countries. To achieve such uniformity it is necessary to have accepted standards for the machine structure of the records and for labelling the various elements that make up the comprehensive contents of the record.

In the early 1960s, librarians became increasingly aware that cataloguing might be simplified if cataloguing copy could be obtained in machine-readable, computer-processible form. The Library of Congress, the primary source of cataloguing copy, commissioned several studies of the potential and problems inherent in the development of such an alternative bibliographic product. These studies, which indicated the feasibility and potential advantages of recording LC cataloguing data in machine-readable form, were discussed at a series of conferences in 1965 and 1966. The outcome of these conferences was the MARC Pilot Project. MARC is an acronym derived from Machine-Readable Cataloguing. MARC is the single most important factor in the growth of library automation in the United States and other countries. MARC forms the basis for storing bibliographic information in a consistent form, sharing that information and manipulating that information by computer.

MARC is a set of standards for identifying, storing and communicating cataloguing information. MARC tags are standard ways to identify elements

of a bibliographic record such as title, edition and subject so that those elements can be manipulated by computers and used by others. MARC structure is a standard way to communicate bibliographic information between users and computers. By establishing a common vocabulary and representation, MARC makes shared cataloguing easier, more powerful, and more flexible.

In MARC cataloguing tags and subfield codes provide a context for cataloguing. They provide a consistent shorthand notation, telling a computer how to deal with the bibliographic record and making it easier for others to use it. Additionally, tags and subfields make possible computer-based systems that provide more access and flexibility than card catalogues.

MARC records communicate bibliographic information with more precision and flexibility than printed catalogue cards. The Library of Congress uses MARC to communicate its prepublication and final cataloguing to thousands of other libraries; other libraries use MARC to share original cataloguing. Without MARC, the various bibliographic services could not have been developed and flourished as they have, nor could users deal consistently with records from the services.

MARC also provides the flexibility needed for individual libraries. Libraries can add information to MARC records, define fields for local use and rearrange existing information, without retyping catalogue cards and risking transcription error. MARC provides the vocabulary and structure to produce catalogue cards and online catalogue access from a single set of information. MARC increases choices for access and display while retaining the economies of shared cataloguing.

USMARC is one of the oldest formats and has been widely used for creation of bibliographic formats and it has been instrumental in the development of several bibliographic utilities like OCLC, which are an asset to the bibliographic world.

Problems arose because of the lack of agreement as to the functions of content designators as well as a misunderstanding, in some instances, of the rationale in assigning some of them to specific elements in the record. It was in order to look for solutions to these problems that the IFLA Working Group on Content Designators was set up at Budapest in 1972, for the purpose of determining in which areas there was uniformity of assignment.

From the examination by the IFLA Working Group came the preparation of UNIMARC, the exchange format for use among national

bibliographic agencies. The design of UNIMARC provided a new approach. Benefiting from the experience of earlier formats, it groups data into functional blocks and aims through use of the ISBDs to be catalogue code independent. It has already been adopted in principle, but has not as yet been implemented, by a number of national bibliographic agencies. On the other hand efforts were being made for reaching a common MARC format for bibliographic exchange between USMARC, UKMARC, and CAN/MARC formats. The aim for this endeavour is to avoid the unnecessary work that having to convert between formats imposes throughout the information world. Shared cataloguing and copy cataloguing are the key words now and the differences in formats are a hindrance in the effectiveness of these concepts. Hence, it is recognized that a common format will go a long way in saving time and human resources spent in the creation of bibliographic records. It will also prove effective in bibliographic control by way of one standardised record for one item instead of different libraries creating separate records for the same item.

Over the last ten years the Library of Congress (LC) and the United States library community have been pursuing harmonisation of the USMARC format with the formats used in Canada and the United Kingdom. At the outset of this project, harmonisation of the USMARC, CAN/MARC, and UKMARC formats was regarded as highly possible because these formats were already similar in many respects. In the late 1960s, when USMARC was under development in the United States at LC, consultation was carried out with library professionals in Canada and the United Kingdom. Library professionals from Canada and the United Kingdom visited LC and discussed the MARC Pilot Project and features of the emerging data exchange format. With similar cataloguing traditions, Canadian and British librarians were very interested in these American developments.

This interaction had an impact on the final specification of the "MARC II" format that emerged at the end of the MARC Pilot Project, and library professionals in both Canada and the United Kingdom began follow-on efforts to develop versions of MARC in their own countries. Those formats today use many of the same tags for similar data: for example, IXX tags for main entries, tag 245 for title, tag 260 for imprint, tag 300 for collation, 5XX tags for notes 6XX tags for subjects, 7XX tags for added entries, and tag 008 for coded data. In addition, developers in Canada made a commitment to minimise the divergence of CAN/MARC and USMARC, even at the detailed level.

However, due to several general conditions differences in the formats remained. One such condition was national needs. For example, the National Library of Canada had to accommodate bilingualism from the outset in CAN/MARC and the British Library centred its development around support for the British National Bibliography rather than a general catalogue. Other factors were cataloguing traditions and interrelationships that, while similar, differed in significant ways. It is difficult and disruptive for cataloguing agencies to give up established practices; thus the format was adapted to their needs.

Another major factor that made format congruence less critical across country borders was the environment of the late 1960s and early 1970s. Because there were essentially no networks, files of records were moved from institution to institution on tapes sent through the mail. Tapes received could be put through a conversion program, which added very little extra time to the movement of a set of records from one agency to another. Also, there were no systems with large resources of records where libraries could obtain cataloguing copy. Thus commonality of format was not an obvious critical need.

In the 1990s, a total transformation of the technical environment vastly increased the potential for international interchange and networking. Today there are enormous bibliographic record resources such as OCLC, RLIN, WLN and AG Canada from which records are sought worldwide. Records are constantly retrieved and received from databases in other countries. The user's expectation and need is to view the record and be able to incorporate it immediately into a file and continue manipulations. Examples are the sets of records that come today via File Transfer Protocol (FTP) from book vendors around the world, which might even arrive before the bibliographic items. LC's experience is that receipt of these records in USMARC format saves resources and time in making them immediately available to acquisitions specialists. Another example is the Z39.50 Information Retrieval Protocol, which supports responses in various record formats including MARC. MARC has been widely used in Z39.50 implementations because systems are often able to screen MARC records as if they came from the internal system, adding to the seamlessness of the retrieval. International connectivity has led to increased activity and expectations from international cooperative programs, making format conversions an obstacle today's real time transfer needs.

The move towards MARC harmonisation basically came about for economic reasons – the British Library, the Library of Congress and the

National Library of Canada were looking at ways to reduce the cost of cataloguing.

It was an accepted fact that one can reduce the cost of cataloguing through cataloguing simplification. A library can also reduce the cataloguing costs by using cataloguing records prepared by other libraries. More and more libraries were willing to explore this avenue.

In order to make use of shared bibliographic data or copy cataloguing it is necessary to have an agreement on the standards used in creating the content of a bibliographic system. In early 1994, the British Library and the Library of Congress, pressured by resource constraints, had some preliminary discussions on ways to reduce cataloguing costs, and decided to hold a format meeting. The Library of Congress extended an invitation to NLC to join this meeting, because LC and NLC were also engaged in discussions on ways to minimise the differences in our cataloguing rule interpretations.

An important turning point in format development came in November 1994 when representatives of the British Library, the Library of Congress and the National Library of Canada met to explore ways to further cooperation in the area of the creation of name authorities and to improve the efficiency and cost-effectiveness of producing bibliographic records. One area of the discussion focused on the possibility of aligning their national formats. Recognising that the emergence of the Internet and current telecommunications technology make national boundaries less relevant to the exchange of bibliographic data, the libraries acknowledged the significant benefits of a harmonised MARC format. They agreed that a common format would facilitate the exchange of bibliographic information by making it faster and more cost-effective for themselves and their constituents. Conversion to and from national formats would no longer be a major obstacle to record exchange. One of the action items called for the British Library, Library of Congress and National Library of Canada to document the essential features of their national formats with a view to further discussion on how best to reconcile these unique differences. The objective was to align the three formats.

During 1995 and 1996, staff from the three libraries held several meetings and discussed the costs, benefits, and possible impacts, and got down to a more detailed analysis of the changes that might be needed. Discussions of the benefits of harmonisation raised the following points:

- cataloguing copy would be easier to obtain and use, and more records would be available earlier;
- maintenance of costly conversion programs could be eliminated;
- earlier information from national bibliographies could benefit collection development;
- enhanced cross catalogue searching would benefit reference and cataloguing staff and users;
- the range of automated vendor cataloguing and online catalogue systems might increase, resulting in more choice in “size and shape” and competition and could stimulate innovation and provide price stability;
- system vendors would not have development costs associated with multiformat support; and
- format maintenance would be reduced when three separate formats were no longer maintained and documentation preparation shared.

Each library resolved to identify the essential features of its national format. The National Library of Canada undertook this activity with the support of its MARC advisory committee, the Canadian Committee on MARC. The Committee agreed that changes should be made to CAN/MARC to align it with USMARC. The Committee also identified a number of essential features of CAN/MARC, which represented a difference from USMARC. The differences with CAN/MARC were primarily in details rather than general specifications. The National Library of Canada decided to make the first review and identified all differences between the formats; it found more than 70 differences.

Chief among these differences were elements that support the bibliographic requirements of a bilingual country. Decisions regarding the alignment of CAN/MARC and USMARC were reached in February 1997; the harmonisation of the USMARC and CAN/MARC formats was accomplished, in principle. Meanwhile, all format changes are being monitored to ensure partial alignment with UKMARC in the short term.

NLC would not have embarked on this harmonisation journey if we did not sincerely believe that it was time to develop a common format, given the economic benefits it would have, but also to face the reality that our world is different from 1972, when the CAN/MARC format was developed to address specific Canadian requirements. Most of those requirements seem less important now given the fact that the Internet and

other telecommunications technology are now making national boundaries irrelevant to the exchange of bibliographic data.

For the USMARC harmonisation with CAN/MARC meant a shift from the “nature of material” to the “nature of data element”. Content designation in the USMARC was developed for different natures of material, for example: book, serials, maps, microforms, computer discs, etc. The result of this shift is that now we do not have different tags for the same data elements in different types of items. For example, in monographic cataloguing, a parallel title requires an added entry. Such added entry is given in a 7XX field. In serials cataloguing also, a parallel title requires an added entry. But in a serial bibliographic record, this added entry is given in a 246 field. Such different forms of tagging same data elements differently in different formats of material are now gone. In the new environment, the data element defines which tag should be used, irrespective of the nature of material. This is what is termed as Format Integration. Format integration changes the way of looking at a bibliographic record with format integration LC records and outside records do not look different. While using an External Source Record to do cataloguing, or when doing “copying cataloguing”, there is no need to change or delete any fields that were considered illegal in a Library of Congress records.

The shift from the nature of material to the nature of data element has created new formats. These are: Authority record format, Bibliographic record format, and Holdings record format.

The areas affected in the USMARC by Format integration are mostly descriptive areas:

1. Variant forms of title.
2. Series statements under certain conditions.
3. Multiple contents notes.
4. Language note.
5. Reflected/Analytical title added entries.

February 1997 saw the harmonisation between the CAN/MARC and USMARC formats. The benefits of a harmonised format include easier and more efficient record exchange between the users and producers of MARC records, elimination of the need for conversion programs, and potential reductions in the expense of format maintenance and documentation. At the same time, it was recognised that UKMARC could not be fully

accommodated. The three libraries recognised that UKMARC must retain certain features of particular value to the UKMARC user community, and therefore full harmonisation is not achievable in the short term. There were about three major areas of differences between the UKMARC format and the North American formats. To achieve complete harmonisation would mean that either libraries and system vendors in the UK would have to make some major changes or system vendors in North America would have to make costly changes. Therefore, for the time being, the libraries agreed to disagree and complete harmonisation with UKMARC remains a long-term goal. In the meantime partial alignment is being pursued.

Associate Librarian of Congress Winston Tabb noted: "The MARC Harmonisation Coordinating Committee will promote future opportunities for format convergence and ensure that future developments will continue to bring the formats closer together. The complete harmonisation of USMARC and CAN/MARC into a single format is a signal achievement which will facilitate record exchange throughout the United States and Canadian bibliographic communities and beyond."

Adds Ingrid Parent, Director General, Acquisitions and Bibliographic Services at the National Library of Canada: "Although there are many benefits of format harmonisation, perhaps the most significant is the potential for reducing the cost of cataloguing. The elimination of format differences across national boundaries will increase the pool of catalogue records available to libraries for copy cataloguing and resource-sharing activities."

Following agreement on the changes required work began on implementation issues and activities. In January 1998, the National Library announced its two-phase implementation schedule for the MARC harmonisation. The changes affecting only the CAN/MARC were implemented in January 1999. In late fall 1999, the National Library of Canada and the Library of Congress coordinated the implementation of changes affecting both CAN/MARC and USMARC.

Additional issues and activities continue to be addressed. The Library of Congress and the National Library of Canada are discussing mechanisms for the coordination and approval of future format development. In addition to the existing national consultative mechanisms, which will continue, this new relationship with the USMARC community offers a further opportunity to review how the Canadian contribution to the development of the common MARC format can be most effective. Although all the changes were made available through advance updates, the National Library of Canada and the

Library of Congress has published a single edition of the MARC formats under a new name — MARC 21 meaning MARC for the 21st century. MARC 21 superseded the most recent editions of the USMARC and CAN/MARC formats.

Over 20 years ago, the MARC Task Group identified the principles for the development of a Canadian MARC format. Adherence to these principles has eased the transition of CAN/MARC from a national format to a format for use worldwide. Not only will the move to the MARC 21 format facilitate record sharing and reduce the cost of record conversions, but it will also provide further opportunities for greater cooperation in bibliographic activities across national boundaries.

10 MARC 21 – MARC Formats for the 21st Century

To summarise

- MARC 21 is the new name of the harmonised CAN/MARC and USMARC formats.
- MARC 21 is the result of the activity undertaken to align CAN/MARC and USMARC. It represents the continuation of the CAN/MARC and USMARC formats in a single edition with a new name.

The MARC 21 formats are standards for the representation and communication of bibliographic and related information in machine-readable form.

A MARC 21 record involves three elements: the record **structure**, the content designation, and the data **content** of the record.

The structure of MARC 21 records is an implementation of national and international standards, e.g. Information Interchange Format (ANSI Z39.2) and Format for Information Exchange (ISO 2709).

Content designation, the codes and conventions established to identify explicitly and characterise further the data elements within a record and to support the manipulation of those data, is defined in the MARC 21 formats.

The content of most data elements is defined by standards outside the formats e.g., Anglo-American Cataloguing Rules (for descriptive cataloguing), Library of Congress Subject Headings (for subject cataloguing), National Library of Medicine Classification.

A MARC 21 format is a set of codes and content designators defined for encoding machine-readable records. Formats are defined for five types

of data: bibliographic, holdings, authority, classification, and community information.

MARC 21 Format for Bibliographic Data contains format specifications for encoding data elements needed to describe, retrieve, and control various forms of bibliographic material. The MARC 21 Format for Bibliographic Data is an integrated format defined for the identification and description of different forms of bibliographic material. MARC 21 specifications are defined for books, serials, computer files, maps, music, visual materials, and mixed material. With the full integration of the previously discrete bibliographic formats, consistent definition and usage are maintained for different forms of material.

MARC 21 Format for Holdings Data contains format specifications for encoding data elements pertinent to holdings and location data for all forms of material.

MARC 21 Format for Authority Data contains formal specification for encoding data elements and identify or control the content and content designation of those portions of a bibliographic record that may be subject to authority control.

MARC 21 Format for Classification Data contains format specifications for encoding data elements related to classification numbers and the captions associated with them. Classification records are used for the maintenance and development of classification schemes.

MARC 21 Format for Community Information provides format specifications for records containing information about events, programs, services, etc. so that this information can be integrated into the same public access catalogues as data in other record types.

The MARC 21 formats are maintained by the Library of Congress in consultation with various user communities.

Through maintenance and revision, content designation is added to and existing content designation is made obsolete or deleted from formats. Content designation is made obsolete when it is found to be no longer appropriate or when the data element involved is no longer needed. An obsolete content designator may continue to appear in records created prior to the date it was made obsolete. Obsolete content designators are not used in new records. A deleted content designator is one that had been reserved in MARC 21 but had not been defined or one that had defined but it is known with near certainty that it had not been used.

The principles stated in this document have developed over time. The formats contain exceptions to the principles due to early format development decisions. While many exceptions have been made obsolete, others remain because of the need to maintain upward compatibility of the formats in current development.

The MARC 21 formats are communication formats, primarily designed to provide specifications for the exchange of bibliographic and related information between systems. They are widely used in a variety of exchange and processing environments. As communication formats, they do not mandate internal storage or display formats to be used by individual systems.

The MARC 21 formats, particularly the bibliographic and authority formats, were initially developed to enable the Library of Congress to communicate its catalogue records to other institutions. The formats have had a close relationship to the needs and practices of North American Libraries with universal collections. They reflect both the various cataloguing codes applied in the library community and the requirements of the archives community.

The MARC 21 formats were designed to facilitate the exchange of bibliographic and related information. An attempt has been made to preserve compatibility with other national and international formats, e.g. UKMARC and UNIMARC.

National agencies in the United States and Canada (Library of Congress, National Agricultural Library, National Library of Medicine, United States Government Printing Office, and National Library of Canada) are given special emphasis and consideration in the formats because they serve as sources of authoritative cataloguing and as agencies responsible for certain data elements.

10.1 MARC 21 Record Structure

10.2 Content Designation

The goal of content designation is to identify and characterise the data elements that comprise a MARC 21 record with sufficient precision to support manipulation of the data for a variety of functions.

MARC 21 content designation is designed to support functions that include.

Display – the formatting of data for screen display, for printing on

3x5 cards or in book catalogues, for producing of COM catalogues, or for other visual presentation of the data.

Information retrieval - the identification, categorisation, and retrieval of any identifiable data element in a record.

Some fields serve multiple functions. For example, field 245 (Title Statement) serves both as the bibliographic transcription of the title and the statement of responsibility and as an access point for the title.

10.3 Organisation of the Record

A MARC 21 record consists of three main sections: the leader, the directory, and the variable fields.

The Leader consists of data elements that contain coded values and are identified by relative character position. Data elements in the leader define parameters for processing the record. The leader is fixed in length (24 characters) and occurs at the beginning of each MARC 21 record.

The directory contains the tag, starting location, and length of each field within the record. Directory entries for variable control fields appear first, in ascending tag order. Entries for variable data fields follow, arranged in ascending order according to the first character of the tag. The order of the fields in the record does not necessarily correspond to the order of directory entries. Duplicate tags are distinguished only by location of the respective fields within the record. The length of the directory entry is defined in the entry map elements in Leader 20-23. In the MARC 21 formats, the length of a directory entry is 12 characters. The directory ends with a field terminator character.

The data content of a record is divided into variable fields. The MARC 21 formats distinguish two types of variable fields: variable control fields and variable data fields. Control and data fields are distinguished only by structure (see sections 7 and 8 below). The term fixed fields is occasionally used in MARC 21 documentation, referring either to control fields generally or to specific coded data fields, e.g. 007 (Physical Description Fixed Field) or 008 (Fixed-Length Data Elements)

10.4 Variable Fields and Tags

The data in a MARC 21 record is organised into fields, each identified by a three-character tag.

According to ANSI Z39.2, the tag must consist of alphabetic or numeric ASCII graphic characters, i.e. decimal integers 0-9 or letters A-Z (uppercase

or lowercase, but not both). The MARC 21 formats have used only numeric tags.

The tag is stored in the directory entry for the field, not in the field itself.

Variable fields are grouped into blocks according to the first character of the tag, which identifies the function of the data within a record, e.g. main entry, added entry, subject entry. The type of information in the field, e.g. personal name, corporate name, or title, is identified by the remainder of the tag.

Bibliographic format blocks:

0XX	=	Control information numbers, codes
1XX	=	Main Entry
2XX	=	Titles, edition, imprint
3XX	=	Physical description, etc
4XX	=	Series description, etc
5XX	=	Notes
6XX	=	Subject access fields
7XX	=	Name, etc, added entries or series; linking
8XX	=	Series added entries; holdings and locations
9XX	=	Reserved for location implementation

Authority format blocks:

0XX	=	Control information numbers, codes
1XX	=	Heading
2XX	=	Complex See references
3XX	=	Complex See also references
4XX	=	See from tracings
5XX	=	See also from tracings
6XX	=	Reference notes, treatment, notes, etc.
7XX	=	Heading linking entries
8XX	=	Not defined
9XX	=	Reserved for location implementation

Holding format blocks:

0XX	=	Control information numbers, codes
1XX	=	Not defined
2XX	=	Not defined
3XX	=	Not defined

4XX	=	Not defined
5XX	=	Notes
6XX	=	Not defined
7XX	=	Not defined
8XX	=	Holdings and location data, notes
9XX	=	Reserved for location implementation

Classification format blocks:

0XX	=	Control information numbers, codes
1XX	=	Classification numbers and terms
2XX	=	Complex See references
3XX	=	Complex See also references
4XX	=	Invalid number tracings
5XX	=	Valid number tracings
6XX	=	Notes
7XX	=	Index terms and number building fields
8XX	=	Miscellaneous
9XX	=	Reserved for location implementation

Community information format blocks:

0XX	=	Control information numbers, codes
1XX	=	Primary names
2XX	=	Titles, addresses
3XX	=	Physical information etc
4XX	=	Series information
5XX	=	Notes
6XX	=	Subject access fields
7XX	=	Added entries other than subject
8XX	=	Miscellaneous
9XX	=	Reserved for location implementation

Certain blocks in the MARC 21 formats contain data which may be subject to authority control (1XX, 4XX, 6XX, 7XX, 8XX for bibliographic records; 1XX, 4XX, 5XX, 7XX for authority records, etc).

In these blocks, certain parallels of content designation are preserved. The following meanings are generally given to the final two characters to the tag:

X00	=	Personal names
X10	=	Corporate names
X11	=	Meeting names

X30	=	Uniform titles
X40	=	Bibliographic titles
X50	=	Topical terms
X51	=	Geographic names

Variable Data Fields

All fields except 00X are variable data fields.

Four levels of content designation are provided for variable data fields in ANSI Z39.2

A three-character tag, stored in the directory entry.

Indicators stored at the beginning of each variable data field, the number of indicators being reflected in Leader/10 (Indicator count).

Subfield codes preceding each data element, the length of the code being reflected in Leader/11 (Subfield code count).

A field terminator following the last data element in the field.

10.5 Indicators

Indicators contain values conveying information that interprets or supplements the data found in the field.

The MARC 21 formats specify two indicator positions at the beginning of each variable data field.

Indicators are defined independently for each field. Parallel meanings are preserved whenever possible.

Indicator values are interpreted independently; meaning is not ascribed to the two indicators taken together.

Indicators may be any lowercase alphabetic or numeric character or a blank (#). Numeric values are defined first. A blank (#) is used in an undefined indicator position or to mean information not provided in a defined indicator position. The blank may have specific meaning when necessary for upward compatibility.

The value 9 is reserved for local implementation.

10.6 Subfield Codes

Subfield codes identify data elements within a field that require (or might require) separate manipulation.

Subfield codes in the MARC 21 formats consist of two characters a delimiter [1F(16), 8-bit], followed by a data element identifier. A data element identifier may be any lowercase alphabetic or numeric character.

Numeric identifiers are defined for parametric data used to process the field, or coded data needed to interpret the field, (Note that not all numeric identifiers defined in the past have followed this specification).

Alphabetic identifiers are defined for the separate elements that constitute the data content of the field.

The character 9 and the following graphic symbols are reserved for local definition ad data element identifiers: ! " # \$ % & ' () * + , - . / : ; < = > ?

Subfield codes are defined independently for each field. Parallel meanings are preserved whenever possible.

Subfield codes are defined for purposes of identification, not arrangement. The order of subfields is specified by content standards, e.g., cataloguing rules. In some cases, however such specifications may be incorporated in the MARC 21 format documentation.

11 Conclusion

MARC is the acronym for MACHine-Readable Cataloguing. It defines a data format that emerged from a Library of Congress-led initiative that began thirty years ago. It provides the mechanism by which computers exchange, use, and interpret bibliographic information, and its data elements make up the foundation of most library catalogues used today. MARC became USMARC in the 1980s and MARC 21 in the late 1990s.

MARC21 has been mapped to the following metadata standards:

- MODS
- Dublin Core
- MARC Character Sets to UCS/Unicode
- Digital Geospatial Metadata

The following metadata standards have been mapped to MARC 21

- MODS
- Dublin Core
- UNIMARC to MARC 21
- ONIX
- Digital Geospatial Metadata

The development of the MARC 21 format is an international effort with avenues for all MARC 21 users to substantially contribute to it.

The Library of Congress and the National Library of Canada serve as the maintenance agency for the MARC 21 formats for bibliographic, authority, holdings, classification, and community information data for the MARC 21 user community. As part of that responsibility, the Library of Congress maintains the MARC Forum, an electronic discussion list for the formats (MARC@LOC.GOV) that provides a conduit board for open discussion of proposed changes and other issues for all interested users around the world. Along with individual MARC 21 user input, the Library of Congress and the National Library of Canada hold open meetings for discussion of changes to the MARC 21 formats.

Proposals for changes to the format may originate from any MARC 21 user. To propose changes to the MARC 21 formats, one needs to fill out the Proposed Change Form or contact the Network Development and MARC Standards Office at the Library of Congress or the Standards and Support Office at the National Library of Canada. Maintenance agency staff (Library of Congress and the National Library of Canada) write, review, and edit proposals and discussion papers twice a year and distribute them electronically via the MARC Forum and the MARC web site. Following the open meetings, held in the context of the semiannual MARBI meetings in the United States and the CCM in Canada, the views expressed, along with those contributed via email and the listserv are used by the maintenance agency to make final decisions on the proposals.

All MARC 21 users are encouraged to voice any opinions and concerns about the MARC 21 formats via three different methods:

- The MARC forum (Electronic discussion list)
- National committees, such as the U.S. MARC Advisory Committee or the Canadian Committee on MARC
- National MARC offices, such as the Network Development and MARC Standards Office at the Library of Congress and the Standards and Support Office at the National Library of Canada.

Bibliographic control by way of a standardized bibliographic record is the need of the hour. Shrinking budgets, increased publishing, new formats all contribute to this need. Bibliographic control can start from the local level to the regional level to the national level and go up to the international

level. It is indeed an idealistic situation but efforts are being made to achieve this ideal and it is essential that each country contribute in this effort. For this a national bibliographic agency can be created which would accept the responsibility for making definitive bibliographic record of its own publications in accordance with agreed international standards. The national bibliographic agency would also need to accept the responsibility for establishing the authoritative form of names for its country's authors, both personal and corporate, and authoritative lists of its country's authors—personal and corporate. This kind of sharing and cooperative activity is possible only when the agencies would adopt the international standards in creating their bibliographic records. The result would be effective bibliographic control and savings for smaller libraries in their own region.

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Developing Marketing Orientation in the Context of National Library, India

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In keeping with its primary mission of preserving and conserving the social, cultural, religious, and socio-economic heritage of India, the paper justifies a case for bringing in 'marketing' orientation in the context of the National Library, India. Emphasising that it is through interventions like 'marketing' that it will be able to optimise 'access' to its content and that too without, in any way, jeopardising its basic interest, the paper also supports the view that doing so will be much easier if the Library advantageously harnesses the potential of ICT.

1 Introduction

In today's world, competitive advantage originates more from knowledge than from the traditional sources of labour and capital. Knowledge has become the leveraging factor in making growth more robust, be it at the micro level or macro. And when knowledge is created, the information base becomes naturally widened and thereby its complexity increases almost exponentially. It is in this context that 'marketing', which has to be understood in a much broader context than just 'buying' and 'selling', comes to play a pivotal role in facilitating the process of individual, organisational as well as national growth. Experience suggests, without this happening, individuals, organisations as well as nations, will literally fail to take a leap forward in the right direction. 'Marketing', aimed at facilitating a constant and open flow of information among its seekers, producers, users, as well as the facilitators, will hold the key as it can facilitate right contact between the right seeker, producer and user of knowledge, at the right time. In other words, 'marketing' is becoming a critical enabler for individuals, organisations, as well as nations to stay competitive in the present day context of 'knowledge-based economy'.

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2 Marketing Knowledge

2.1 The First Steps

Traditionally, national libraries have been held as temples of knowledge, providing access to a chosen few, the kings, the queens; their prestige derived not only from their preciousness to the nation, but also from their distance maintained from the people. They were held as elite institutions. However, in today's context, national libraries will have to rise above their storage and archival functions and in that they will have to (1):

- Make their collections more easily available so that they can be effectively used by more people, at a time and in a way that suits them.
- Reshape those services for which there are alternative sources of supply in order to meet the changing needs of users.
- Contribute to the effectiveness of library provision within the country as a whole by working with other library systems to improve collaboration and coordination.
- Develop as part of the global network of libraries in order to provide access to national and international resources.
- Extend opportunities for enjoyment and learning offered by the library.

In such a scenario, our National Library must initiate the following interventions:

- Provide information about its content
- Convert or acquire content in an easily accessible and archiveable format
- Make the information and content available in user-friendly ways

Behind these interventions are the enabling strategies of focusing on users, working in partnership with others and exploiting the Web.

Clearly, the main access route is going to be via the Web. Our National Library must, without any further delay, re-launch a completely new Website which will make it much easier for users to seek out and use the vast range of products and services which it can offer.

However, since not everyone has access to the Internet, the National Library will have to explore other ways in which its users can interact with it.

2.2 Marketing Plan

This calls for our National Library to refine its mission and create a marketing plan conducive to achieving that mission. In other words, it means that our National Library, as any corporate, has to be “client-oriented”, which in turn will prompt it to “reach-out” and in that process look for who, where, and what for its clientele are.

2.3 The Strategies

As corporate houses use marketing strategies to identify customers and their needs, to be well known and chosen by them, to evaluate and to reach their satisfaction and to conquer their fidelity, our National Library will have to adopt these strategies to reach its clients. Communication, customer satisfaction, target, even competition are words and concepts, that our National Library will have to deploy to become user-oriented.

It is easy to consider readers and customers as very similar: readers use the library and its services: they have become “users” and national libraries have to reach the greatest number of them and satisfy their needs. Services to local and remote users must be increased in quality and number. Increasing these initiatives leads to increasing costs and usually the budgets received by governments are not sufficient.

Much of what has been outlined above is not that difficult given the fact that state-of-the-art information technologies are being put in place by libraries to acquire, organise, store, retrieve and disseminate information. Print, electronic, audio-visual, and network based media are some illustrative ways, used by the libraries to communicate information. The other fact that, when in today’s context, access to ‘information’, is easy and convenient, the focus has moved to the ‘knowledge’ derived from this information. With this shift in the focus, approaches like ‘marketing’ would include the tasks of scanning, filtering, selecting, organising and packaging/repackaging the ‘flood of information’. In keeping with this requirement, our National Library will have to change its role from ‘gatekeeper’ to ‘gateway’ of information, and in that it should be performing such tasks as information mapping, information audits, training in information literacy, information sharing of best practices/competencies, and helping its users to navigate through the world of information, more meaningfully.

3 Information Products

By virtue of using a variety of IT tools and techniques, our National Library has been able to generate various kinds of information products and services in addition to performing its routine tasks. However, it is somewhat unfortunate that these remain largely underutilised, or even, in cases, wholly unutilised. The reasons cited are several and include the following:

- i) efforts in identifying and reaching out to the target clientele are inadequate;
- ii) level of information awareness or consciousness is still low among the users and there is a need to raise it further;
- iii) information products and services are “*generator*” - driven rather than “*user*” -driven and in that there remains a “*linkage gap*” between the generators and users of such products and services.

In keeping with this scenario, our National Library will have to, in all earnestness, start taking an active interest in building a strong image of its own well as in the marketing of its products and services. This approach has to find increasing acceptance among the library authorities as well as library users who are now, all the time, subjected to the pressures exerted by several factors, such as outlined below:

4 The Constraints

4.1 Increasing Resource Constraints

Librarians are deluged with advice as to how to acquire and organise learning resources and satisfy the complex and ever increasing information needs of their users. This situation gets further compounded when the question of a resource constrained regime comes into the picture, even in the context of national libraries. Our National Library, once held and accepted as ‘cost’ centres to cater to the information needs of their respective (mostly internal) clientele are now looked upon as out-reaching centres and, thereby, revenue generating ones also.

4.2 Inadequate Resource Utilisation

The National Library has, over a period of time, built rich learning resource materials. These remain largely underutilised as their use is generally limited to the clientele visiting the Library. In such a scenario, while on the one hand, there is an increasing demand for availability of right information, on the other, it is not possible for everyone to go in for

huge investments in terms of developing appropriate information infrastructure. Hence out-reaching is the solution to bridge this gap and it is the absorption of marketing strategies which can make it happen.

Through adoption of time-tested marketing segmentation and research techniques, the National Library will have to take up the challenge of looking out for ways and means to increase its client base in its various constituencies and then open up its resources, facilities and services to meet the information needs of the clientele in all those constituencies.

4.3 Increasing Cost of Information and IT

Information is becoming increasingly expensive and so is its packaging and repackaging. Value addition of the information, makes it even more expensive. There is a further rise in the cost of information when IT (acquisition and upgradation) is to play its role in designing and delivering information services and products.

4.4 Decreasing Public Sponsorship

The age-old concept of certain social services like health, education, justice, etc. being made available, free of cost, is becoming irrelevant as the time goes by. This is true with library and information services. The institutions engaged in providing all such services, including the national libraries, as well are being geared to become self-reliant, if they are to survive in cost conscious and competition-oriented social and environmental set-ups. Public funding for such purposes is being questioned.

5 How to Go About?

Though there cannot be any two opinions as to whether marketing orientation in LICs is required or not, there are certain inhibiting factors - including the following - that stand in the way (2):

5.1 Misunderstanding

Librarians still feel that provision of library and information services is a social responsibility and adopting marketing approach to them means only commercialisation, publicity or public relations.

5.2 Attitude

Librarians have been expressing satisfaction when they have been able to provide the information to the client as per his/her specific request. Attempting something beyond that is what is required in case they intend

bringing marketing orientation into their set-ups. This means a major shift in approaches/mind-sets is required.

5.3 Library vs its Parent Organisation

Since libraries generally exist in relation to their parent bodies, they are viewed as a sub-systems of the main system. Hence marketing will find its way into the sub-system only when there is marketing orientation in the main system itself. Within the sub-system itself the marketing approach has to be accepted by all involved rather than leaving it to be the domain of only public relations staff like Circulation and Reference. It will yield more encouraging results if everyone involved in the sub-system is groomed to appreciate the client orientation.

5.4 Systems and Procedures

Librarians, particularly in the context of the National Library, because of various well-known reasons like physical verification, audit, etc., have been more concerned with storage and security aspects of the information rather than its use. The methods, systems and procedures followed there are therefore, biased towards this aspect rather than the use or user aspect. This has also to change. Systems and procedures should pay more attention to the use and the user of information rather than to safety and security aspects alone.

5.5 Free Concept

The concept that information should be made available free has to go as it costs quite a bit to acquire, organise and retrieve it. In fact, in view of the utility of information, the thinking should change to the one where the client should be happy to pay for it.

6 Conclusion

Since the National Library is suggested to lay more emphasis on the 'service' aspect, its librarians will have to adopt fundamentals of 'service' marketing for bringing in marketing orientation in their respective set-ups, while performing their roles. To achieve this, they will have to (3):

- i) Develop a marketing plan conducive to the redefined mission of the National Library.
- ii) Identify the market, i.e. the client base in internal as well as external environments by following time-tested marketing strategy/research methods.

- iii) Identify the needs, wants and demands of the clients.
- iv) Further develop resources and facilities by fine-tuning their resource development policies.
- v) Identify, design, package and promote tailor-made services and products to meet the needs of the clients satisfactorily.
- vi) Price the services and products to suit the client's pocket.
- vii) Ensure that the reputation of information services and products offered matches with the organisational reputation.
- viii) Re-design and redevelop systems and procedures to have client orientation in-built in them; and
- ix) Develop staff to understand and be responsive to client needs.

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Digital Resources and its Archiving in the National Library

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Libraries are always an important and indispensable source of knowledge and information. They are meant to fulfil the educational and learning needs of the community and society as a whole irrespective of distinction, caste, creed and religion. The National Library has higher value than any other library of the nation, as the capital of the country in any city of the nation. Value of the National Library is based on the interest of the community of the nation, in obeying and following the Copyrights Act. Under the present circumstances of IT, it is easier to follow the Copyrights Act, in the formation of digital archives under E-learning with respect to the National Library.

1 Introduction

Today, we are constantly associated with Information Technology, Internet, World Wide Web and their implications on our day-to-day lives. For communication (E-mail) and online shopping, we are now looking forward to electronic means of almost everything. Globalisation is happening at an incredible rate and it would be absolutely unfair, if we forget how libraries are affected or rather helped by this revolution at the hands of Information Technology.

Access to information from various sources along with reader satisfaction is leading to the development of newer and newer technologies and one of the most interesting of them is 'Digital Libraries'; the most talked about and the most debatable subject. The term digital library is the result of the information proliferation and technological advances. The creators, managers and the users of information have huge expectations with this term.

2 What is Digital Library?

Digital libraries are the organisation that provide the resources, including the specialised staff, to select, structure, offer intellectual access

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to, interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works, so that they are readily and economically available for use by a defined community or set of communities. Digital libraries are formulated under E-learning or E-information. E-learning is an important part of every digital archive and learning object repository is a Web-based application, that can be used to collect, organise and disseminate learning object is called an online learning object repository. Many archives (repositories) that host feature rich, powerful 'learning object' search engines, which provide links to sites with learning materials that match a search criterion.

3 Planning Policies and Procedures

- 1 Digital Library staff should determine a schedule for provision of the new selected digital resource for the users, including a time-bound programme during which the services may be available in a testing/orientation mode for library staff, which will be involved in the direct provision of service.
- 2 The digital library should examine existing procedures and policies to determine whether they apply to the new service and if necessary or needed to develop new policies and procedures.
- 3 The digital libraries should determine which staff will be involved and what their specific responsibilities and assignments will be in implementation of the digital resources.

4 Digital Resources for National Library

The sources of information, which are available in the form of digital and electronic formats, are known as digital resources. The knowledge that becomes dynamic resource is easier for global sharing than knowledge in any form and lends scope for automated delivery mechanism. Information has been embedded in varieties of ways and forms in various kinds of digital resources. The digital resources of information for the national library by which we can retrieve the required information within a reasonable time with accuracy.

Intellectual Property Rights: IPR (patent, copyrights, trademarks, trade secrets and cyber law) is the best source of collections whether in the form of printed/electronic media for the digital collections for the National Library.

In our country the publications are huge in number of languages, which require necessary adoption of national policies. All national publishers have to provide their published work, in any form, today the best source are E-mail, CD-ROM, DVD and floppy under Copyright Act-1957, Copyright Amendment 5th and last Act-1999, IT Act-2000 and Communication and Convergence Act-2001, the above act fully covered both the printed as well as electronic materials.

5 Digital Library Standards in India

In India, very few standards pertaining to digital materials have been developed. The Guide for data elements and record format for computer-based bibliographical databases for bibliographic description (IS: 11370-1985) is perhaps the only relevant Indian standard that has been developed for digital materials so far. More standards can be developed and adhered to for the purpose in India.

At the international level, however, quite a number of standards are available, which can also be considered.

Appropriate and relevant use of these standards may be made in the digitisation program.

6 Purpose of Archiving for National Library

Archives have existed since ancient times. According to James O'Toole (1990), the term "archives" was originally used to "designate all collections of written records". In the modern world, however, the word "archives" is commonly used in three different senses. First, archives are documents that are created or accumulated by an individual or an organisation in the normal course of business. Second, archives are the independent agencies or programs within institutions that are responsible for selecting, preserving, and providing access to archival documents. Finally, archives are the buildings or repositories that house collections of archival documents.

To understand the nature of archival documents in the first sense of the word, it is helpful to make a distinction between records and archives. Records are all information, regardless of format, that is produced or accumulated in the normal course of affairs by an individual or an organisation and is maintained in order to provide evidence of specific transactions. Archives are those records that are deemed to have continuing value and are therefore retained beyond the period in

which they are actively used. Thus, archives constitute a smaller portion of the entire documentary universe than do records.

Like records, archives can exist in any format on which information has been recorded. Archival collections frequently consist of a wide variety of media. In addition to traditional textual materials, archivists care for materials such as photographs, films, videotapes, sound recordings, and magnetic tapes and disks. The many issues posed by archival materials recorded in electronic format are among the greatest challenges facing the archival profession.

Archival materials, like library materials, are important cultural resources. Several characteristics, however, distinguish the types of materials generally held in library collections from those found in archival collections. Alternate copies of the materials housed in a given library can often be found in the collections of other libraries. Archival materials, in contrast, are often unique and are found only in a single repository. Sue McKemmish (1993) provides an overview of the key distinctions between library and archival materials. She describes the materials held in libraries as information products, which have been consciously authored for dissemination or publication "to inform, perpetuate knowledge, convey ideas, feelings, and opinions; to entertain, (and) to provide information about their subject". She characterises materials found in archives, on the other hand, as information by products of activity, which are accumulated or created in the course of doing business in order to facilitate the business process of which they are a part. McKemmish further notes that while library materials are often discrete items, archival materials are usually part of a larger group of related records.

Archives are vital to society for many reasons. Among the most important functions that archival records fulfil is that they serve as instruments of accountability and as building blocks of collective memory. John McDonald (1998) succinctly expresses the relationship between records and accountability as follows: "Without records, there can be no demonstration of accountability. Without evidence of accountability, society cannot trust in its public institutions." In addition to providing for accountability, archival collections constitute an important part of society's cultural and intellectual heritage, thereby contributing to the formation of a nation's collective memory, to ensure the preservation of this valuable legacy and to provide for democratic accountability, archivists and records managers (including public

records officers) from diverse organisations must work together to administer the records that they hold in trust for future generations.

7 Merits of Digital Archiving

- 1. Accessibility:** The digital library is accessible to the user without any geographical constraints. Being available on the network, it is even possible to access the information from a remote site provided you too have a computer with an Internet connection of proper bandwidth;
- 2. Information Sharing:** Libraries and archives have information which is unique in character and digital libraries have made possible the sharing of this information in any format by keeping it at one secure place, with few duplicate copies strategically placed around the world and hence avoids physical duplication of material and hence preserve it's fragility;
- 3. Updating Information:** Digital libraries are considered the best source of up-to-date and current information, as the information is quite easy to update when it is placed on one computer;
- 4. Information Collection and Dissemination:** We are well aware of the online searching that becomes quite easier to use the computer. Computers are known for fast browsing and searching and location for keywords just like find option of the Edit menu in MS word. Just imagine how easy it is to find one word in a 100-page document. Similarly when in digital libraries where the information is in ASCII form, the search is very fast. Digital libraries make possible the simplest keyword searching, using the full text of a book, document or article instead of just the title or subject;
- 5. Resource Sharing:** Digital archiving also permits libraries to expand the range of material that can provide to their users other than online text and photographs for example; audiocassettes in the libraries can be digitised to audio cards and can be uploaded on the network;
- 6. Services:** Efficient and better access to traditional materials sitting at one place has been made possible by digital archiving;
- 7. Economic Aspects:** The cost involved with the digital libraries is however less expensive if you compare it with establishing

a library for the simple reason that they don't need nearly as much physical storage space. All the information could be stored on CDs, hard disks, or other digital media in a small building. The expensive part comes in the initial phase during the making of a digital library for computer equipment, trained personnel to operate, and time to scan the material and put it into a digital format;

8. **Storage and Preservation:** Preservation in a digital world does not depend on having a permanent object and keeping it under guard, it is very advantageous to those libraries that established in fragile and rare material. Once the material is digitised, it is accessible to the users without its physical handling and fare;
9. **Information Look:** Finally, digital storage of documents allows efficient and user-friendly look of information. The information can be arranged in any fashion depending on the needs of users, Graphics and multimedia techniques can be used effectively in user interfaces to display information effectively.

8 Demerits of Digital Archiving

1. **Digital Divide:** We are aware with facts that the digital libraries access is dependent upon hardware and software requirements, therefore the information would only be available to people from affluent communities who have the necessary equipment. As a result, information and knowledge sharing would not be on fair grounds and all the people may not have a similar quality of information access.
2. **Intellectual Property Rights (IPR):** The most serious problem is the copyright issue. When the information is distributed across the network to many users with duplicity of copies, what happens to the copyright and other authorship/licensing issue? This is a critical area altogether and needs discussion and an immediate solution.
3. **Integration of Digital and Traditional Resources:** Mixing new technologies with printed media in a number of languages, and managing such diverse resources globally on a large scale can be a difficult and a costly task and may pose too many problems, which can differ from country to country.

4. **Access Management:** So far, there are no particular policies for the access to the digitised material and framing them. Keeping in view the legal restrictions of the digitised resource, which is again dependent upon individual resource attributes and licensing by publishers, is a difficult task.
5. **Technical Hindrance:** Whosoever wants to access the digital libraries first of all needs to have a computer with network connection of adequate bandwidth, which can be a costly affair in a developing country like India. For storage and retrieval, digital libraries are totally dependent on computer and electronic network systems, when failure due to power supply or power fluctuation or technical problems or low quality materials or fluctuation of weather, etc. can hinder the information flow. Moreover, there are varieties of software formats used in different parts of the world and lack of standardisation may become a problematic area in retrieval of information.
6. **Reading Habits:** The information sources available on digital libraries are not as portable as compared to traditional libraries. It is very difficult and uncomfortable to read the long articles or text directly from the screen.
7. **Information Utility:** Electronic access to information is a wonderful concept but it is not easy to get what one wants. We might get all the data but how to use the same and put it to effective use still remains a question. Intellectual access and ability to search for the right information for the right use will still be a problem and cannot be worked out without the help of information professionals.
8. **Economic Factors:** For developing countries the cost of assembling and maintaining the software and hardware to convert and handle digitised images is very high. The cost of maintaining and updating digital information and training staff from time to time is also a big task as compared to traditional libraries. Moreover maintaining both print and digital objects can be expensive for any library. We generally desired cheap and second hand materials for use, which are based on the economic policies that vary from nation to nation.

9 Assessment and Evaluation for National Library

1. Responsibility for assessment and evaluation should be clearly assigned to the respected staff personnel.
2. The digital National Library should conduct an initial evaluation and subsequent regular evaluations to determine the effectiveness of the digital resource in meeting information needs of the user community.
3. Formal and informal evaluations should be used to determine the optimum allocation of resources to provide quality services.
4. Integrate the perspectives of staff and community in the overall evaluation procedure for information service.
5. Digital library in its evaluation of services, should emphasise the factors most important to the community using these services, viz. response time; accessibility of services; the value and effectiveness of services for various groups among the population served; and effectiveness in anticipating its community's needs.
6. The digital library should evaluate individual resources within the collection based upon professional standards and users' needs. It should also evaluate its information resources as a unified information system, including in-house print and non-print as well as accessible external resources.
7. The digital library should appraise the performance of individual staff members and of the collective performance of that staff at regular intervals.

10 Conclusion

Being icons of information policy for their respective countries, national libraries are perhaps the most visible manifestations of information, distribution that can be observed by the outside world. While national information policies are not promulgated in such institutions, but rather in the countries legislative bodies, the libraries do play symbolic roles beyond the practical ones of organising and providing access to information.

We should be proud to have a good and historic National Library. However for pride the collaboration, cooperation and sympathy to the

nation is a must. In the electronic age, it is quite easy, and digital archiving enforcement should be a must for every nation (under the Copyrights Act 1957, Fifth Amendment Act 1999, IT Act 2000 and Communication and Convergence Act 2001, given clear direction). As followed in the Library of Congress and British National Library, etc. so that they provide pre-publication data on each and every publication (i.e. Class. No., ISBN and Subject Headings, etc.).

Concept, implementation and marketing are the three vital ingredients in the chain that contribute to making the adoption of any innovative initiative. A success, 'implementation' is the most crucial aspect for the success of E-governance initiatives. If you fail on the implementation front, people will blame the concept itself.

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Emerging Needs for the Improvement of Service Quality of the National Library of India in the 21st Century

Atin Nandi*

The National Library of India is a national deposit centre and national bibliographic centre of India. With the advancement of Information Technology, the user expectations are proliferating. This is the right juncture to set up a modern information system with the help of the right infrastructure in order to strengthen the ties with the users. The paper discusses some aspects for rendering qualitative services to satisfy the 21st century user community of the library.

1 Introduction

Calcutta Public Library was established in 1836, and Imperial Library on the other hand was formed in 1891. Lord Curzon, the then Governor General of India, merged Calcutta Public Library with Imperial Library. The name of the Imperial Library was changed to National Library with an enactment of the Imperial Library (change of name) Act 1948. The National Library of India, the largest library of the country, was created to collect and preserve the published heritage of our nation.

2 Objectives

The aims and objectives of the National Library of India are:

1. Acquisition and conservation of all significant printed material produced in the country to the exclusion of the ephemera;
2. Collection of printed material concerning the country wherever it is published and also acquisition of a photographic record of such material that is not available within the country;
3. Acquisition and conservation of manuscripts of national importance;

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4. Planned acquisition of foreign material required by the country;
5. Rendering of bibliographical and documentation services of retrospective material, both generalised and specialised;
6. Acting as a referral centre purveying full and accurate knowledge of all sources and bibliographical information and participation in international bibliographical activities;
7. Provision of photocopying and reprographic services; and
8. Acting as the centre for international book exchange and international loan.

The service quality can be improved by extrapolation of objectives with proper introduction of Information Technology.

3 Services Offered

The National Library of India is situated at Kolkata. The library renders a wide spectrum of services, namely –

- (i) Reading room service
- (ii) Lending service
- (iii) Inter Library Loan (ILL) service
- (iv) Reprographic service
- (v) Reproduction of hard copy from microfilms
- (vi) Bibliographic service
- (vii) Reference service
- (viii) Services for children

These traditional services are insufficient to meet the needs of users of different interests in the 21st century. Some more services are to be implemented to bring the service quality of the library to the optimum level.

4 Future Services for Improvement

Kalpana Dasgupta, former Librarian of the National Library of India (1983-1995), rightly observed, "India is on the threshold of major changes which will be possible only if a worthwhile and modern information system is set up at the right time, with the help of the right infrastructure and is administered by the right type of qualified people."

(a) Development of Digital Library

A digital library is an excellent collection of information, which is stored and accessed electronically. A digital library system integrates text, image, audio and video resources, which can be delivered across a network. System software, application software, server, interconnecting networks, end-user workstation, and database are the building blocks for a digital library. The National Library of India should develop its own digital library in order to render service of a very high degree to users' satisfaction. Expertise brainwork is to be carried out towards selection of standards, protocols and formats for the future digital library. Projects may be initiated to develop library software for development of digital library for National Library of India.

Search features should incorporate the following.

- Boolean searching facility
- Phrase and proximity searching facility
- Relevance of ranking
- Language translation
- Multimedia searching
- Wildcards searching

(b) Development of Database

The National Library should make sincere efforts to develop a comprehensive database for different types of materials within the library. The Government of India will have to take firm steps so that the library can acquire more and more books in its collection under the Delivery of Books and Newspapers (Public Libraries) Act, 1954.

(c) Cross-language Information Retrieval

The question regarding multilingual access and multilingual information retrieval is an extremely complex issue. People of different cultures, different languages, and different texts are found to be located within the country. In order to provide cross-language information retrieval, the following points are to be considered.

- i) Development of indigenous multilingual thesauri (like EUROVOC in European countries)
- ii) Adaptation of UNICODE in languages other than English.

- iii) A multilingual information-processing infrastructure (like Efficient, Programming and Interchangeable Code Infrastructure for Symbols and Texts, abbreviated as EPICIST) are to be considered.

(d) Assistive Technology

Disabled people cannot make use of conventional computer-based information services, hence additional requirements are needed for them, which are nothing but Assistive or Adaptive Technology (AT). ATs are available in many shapes and forms. It may be as simple as magnifying glass, hearing aids, and wheelchairs or may be sophisticated tangible or intangible products like screen reading software, screen magnification software, cognitive software, Braille printer, specialised mouse/ keyboard, etc. used by the people with disabilities. People with different disabilities use different Assistive Technology products. Sometimes similar AT products may be used by people with different disabilities.

The National Library should provide access to information to everybody irrespective of any disability. For that purpose the authority should make the library aware of suitable Assistive Technology. The selection method is not a very easy task. It is a multi-step process that has been given below.

- (a) To determine the target or focus group
- (b) What kind of assistive technology and services are to be considered?
- (c) To acquire comprehensive knowledge on the products of Assistive Technology
- (d) Selection of proper vendors

While selecting the hardware and software products, one should think about – user friendliness, facilities, cost, reliability, durability, and safety of products. The National Library of some countries like Australia, America and Canada have the mandate to promote equitable access to library and information resources for the citizens.

(e) Accessible Web Designing

Web accessibility is the process of accessing different Websites by disabled people with the assistance of Assistive Technology. Sincere efforts have been taken on the World Wide Web to improve the accessibility for millions of disabled people around the globe. Millions of disabled people around the globe may miss extracting the benefits of digital revolutions unless accessible Websites are not designed for them.

The Website address for the National Library of India is - <http://www.nlindia.org> the following instructions are to be followed to make it accessible more effectively.

- (i) Scrolling text or flashing text should be avoided.
- (ii) Excessive use of colours or overshadowing of content will have to be omitted.
- (iii) Font size should not be very small.
- (iv) Incorporation of video, audio, captioning, etc. should be used for people with hearing disability.
- (v) Style sheets should be used for Websites for colourblind people.
- (vi) Pictures, graphs, charts should be avoided for Websites meant for blind people.
- (vii) Standardised icons as well as Disability Access Symbols are to be used whenever possible. Illiterate or dyslexic persons can also recognise such icons or symbols very easily.
- (viii) Testing of accessibility of a Website should be carried out with the help of accessibility testing software such as A-Prompt, Bobby, Macromedia, WAVE, etc.

Separate sections should have to be incorporated within the Website of the National Library of India for people with different disabilities namely, visual disabilities, hearing disabilities, cognitive disabilities and motor disabilities.

5 Conclusion

The National Library of India has a vast resource of information. The library imparts various types of services to the users. With the advancement of Information Technology, the volume and the range of digital resources and services are increasing. Users are also developing the habits of using sophisticated instruments for electronic access of information. This is the right juncture to develop a modern information system with the help of the right infrastructure. In fact the library should transform from a traditional library to a modern library to greet the 21st century with the help of byproducts of Information Technology.

The National Library of various countries like the UK, USA, Canada and China have undergone many fold advancement. The Government of India should come forward with a high degree of interest so that our country can also find a position like those countries. The National Library of India

should accept the real challenge to provide support so that different types of users can be satisfied in a better way in the present scenario of the digital era. A very good library environment will encourage the library staff to be continual learners and at the same time they will strive for continuous improvement of the library.

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Information Management in National Libraries in Delhi: An Analysis

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The outstanding advances in Information Technology make it necessary to change the traditional image of libraries and adapt to the threats and changes posed by these technologies. Information Technology offers an unprecedented opportunity to store, retrieve, manipulate and to exploit the information. Basically, Information Technology connotes a combination of technologies such as computer, telecommunication and reprographic. With the fast pace of technological changes affecting every known aspect of libraries, the national libraries cannot remain aloof from the impact of such changes, whereas information provision in national libraries was previously based upon the collection of physical library materials, it is now increasingly moving their collections into virtual arena. These libraries are adopting such changes in the management of their day-to-day activities, but it is observed that the adoption of new advancement especially IT by such libraries is not at the expected level. Some libraries are in an advanced stage of adopting such changes. The others are planning stage. The purposeful and systematic acquisition and application of information with the help of suitable information technology are the core ideas behind the concept of Information Management. The paper discusses the information management activities of national libraries in Delhi and puts forward some suggestions to be implemented for the further improvement of their services.

1 Introduction

Information Management (IM) comprises disciplines concerned with the study and the effective and efficient management of information and resources, products and services as well as the understanding of the involved technologies and the people engaged in this activity. Keary [1] defines IM as a methodology for identifying all existing resources within an organisation whether paper or electronic and it is more than management of IT. Tailor and Farrell [2] opine that IM is the exploitation of more efficient use of

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information for decision-making and planning in an organisation by managing information resources. Information management shall help an organisation recognise and use the potential of the information resources and information technology (IT). In simple words, IM is not only about managing the processes of selection, collection, processing, controlling, and dissemination of information but also enabling the effective use of information [3].

Information cannot be well managed until some group within an organisation has clear responsibility for the job. Hence, by and large, we see that IM involves all the activities of library administration. It goes a step further in enabling the generated information to be used effectively for achieving organisation goal. And this is done with the help of IT. IM evolved in the 1980s and has a strong hold till today as we are still in the information age. But nowadays, IM is mostly concentrating on electronic resources, as they are being published more and more and increasingly becoming popular [4]).

2 Scope of the Study

The scope of the study is to assess Information Management in three National Libraries, all are in the field of Science and also situated at Delhi, the capital of the country. The study has been undertaken in the following National Libraries:

1. National Agriculture Library (NAL)
IARI, Pusa Road, New Delhi
2. National Medical Library (NML)
Ansari Nagar, Ring Road, New Delhi
3. National Science Library (NSL)
NISCAIR, 14 Institutional Area, New Delhi

3 Methodology of the Study

To gather the necessary data in the present study, the questionnaire, interview, observation and document review techniques have been used as data collection tools. In order to produce a reliable questionnaire, efforts have been made to acquire maximum available materials on the present topic.

4 National Agriculture Library (NAL)

The IARI Library is the heart of the Institute. For the last 90 years, the Library has expanded to meet the ever growing needs of the scientific and

student community of the Institute and of the country as a whole. It has assumed the de facto status of National Agricultural Library of India and has been regarded as one of the 10 best agro biological libraries of the world.

The Indian Agricultural Research Institute was originally established in 1905 at Pusa (Bihar) with the financial assistance of an American philanthropist, Mr. Henry Phipps. IARI was shifted to its present site at New Delhi, in 1936, after a major earthquake damaged the institute's building at Pusa (Bihar). The institute's popular name 'Pusa Institute' traces its origin to the establishment of the institute at the place Pusa in Bihar.

The library today houses over 6,00,000 highly specialised research publications on agriculture and related sciences consisting of books, monographs, reference materials, journal advances and annual reviews, abstracting and indexing journals, translated periodicals, statistical and data publications, bulletins (serials publications), reports, pamphlets, reprints, news clippings, post graduate theses of IARI and ICAR research fellowship theses. The collection gets enriched annually at the rate of 8,000 to 9,000 documents. The library has 10,500 serial files and 4,000 current serials are being procured from 80 countries through subscriptions, gifts and exchanges.[5]

Services

IARI is the largest research institute in the field of Agriculture Science in India. The research activities are carried out under the various schools and regional stations. The service of NAL includes

- i) Internet Service
- ii) Lending Service
- iii) Reference Service
- iv) Journals and Periodical Service
- v) Reprography Service

Databases

AGRIS, AGRICOLA, CAB AGRICULTURAL BIOTECH DATABASE, etc. are the major databases available in the library. Biotechnology database is developed by IARI and it contains the published literature on Indian work in the field of Plant Molecular Biology, Plant Tissue Culture and Photosynthesis.

The information can also be retrieved from the CD-NET, established at the National Agricultural Library of the institute.

5 National Medical Library (NML)

The library was initially conceived as a departmental library with a small collection of books for the use of officers of the erstwhile Directorate General of Indian Medical Services (DGIMS).

The DGIMS was later merged with the office of the Public Health Commissioner in India in 1947 to form the Directorate General of Health Services (DGHS) and the library became DGHS Library. Realising the need for a Central Library to support academic, research and clinical work of Biomedical Professionals in the country, the DGHS library was developed gradually and declared as Central Medical Library in 1961 and as the National Medical Library on April 1, 1966. The Library is mainly a reference library in the field of Medical and Allied Sciences. It is open for consultation to the entire medical, paramedical and allied professions.

It has 3.6 lakh volumes of books, reports, bound volume of journals and other literature and adds about 3000 latest books and serials every year. It also subscribes to 2000 current periodicals. The library has a good collection of 19th century literature. Books collection is divided into pre-1977 and 1977-onwards, and is classified according to the Dewey Decimal Classification Scheme. Bound volumes of journals are divided into upto-1990 and post-1990. NML is also the National Focal Point of HELLIS Network set up by WHO in Southeast Asia in 1982. NML being the National Library has been organising training programmes for medical/health science librarians since 1980. It has organised 17 Orientation Courses in Health Science Librarianship, each of 5-6 weeks duration and trained over 150 librarians in the country.[6].

Library Services

Major services are:

1. Reprography Service
2. Lending Service
3. Reference and Consultation Service
4. Information Retrieval Service
5. Databases : NML receives following computer-readable databases on CD-ROM and provides information retrieval services to its users on topics of their interest :

MEDLINE, HEALTH STAR, EMBASE, AIDS LIBRARY, CANCER-CD

A list of references with annotations/abstracts is provided free of charge to requesting users. Interested users are also helped to conduct search for themselves.

Future Plan

Scheme for linking of all government Medical College Libraries with National Medical Library, New Delhi.

It has been decided to take up a pilot project for linking Government Medical College Libraries with National Medical Library, New Delhi. Through this pilot project one Medical College Library of each state, will be provided hardware, software and a telephone connection exclusively for Internet connection.

6 National Science Library

NISCAIR is a single window in the country for providing all kinds of S&T information. Its role as the national information resource is fulfilled through the National Science Library (NSL) that has a comprehensive collection of S&T publication in the country and is offering service on a national scale. NSL also acts as a referral and clearinghouse of the best utilisation of the existing collection in the country. Thus, it extends its base of operation to the national scale.

Set up in 1964, NSL aims at acquiring all the important S&T publications published in the country and strengthening its resource base for foreign periodicals by acquiring the journals on CD-ROM or other electronic form as far as possible. NSL has a rich collection of over 1,90,000 books including reference books, reports and standards. The library has one of the finest collections in the field of information science and technology, reference materials /secondary sources, conference / seminar/ symposia proceedings in S&T, foreign language dictionaries and the medical and aromatic plants. It subscribes to almost all worthwhile Indian S&T periodicals publications and receives over 5,100 Indian and foreign periodicals. Of these nearly 3500 periodicals are in electronic form including 1,133 full text journals.

In addition, full text databases like the US Patents Database and prominent directories are also being obtained on CD-ROM. To provide time bound information services for corporate and business sector, NISCAIR is acquiring over 800 management and business periodicals on CD-ROM. Information on market intelligence; competitors and global lenders in an area can be provided by scanning international databases. [7]

Electronic Resources

1. Online databases: NISCAIR has access to international databases information obtained through online searching from over 1500 international databases. Skilled personnel at NISCAR perform searches for research scientists and corporate sector who use this databases for the latest R&D, commercial, and market information.
2. CD-ROM Databases: The databases subscribes on CD-ROM includes ADONIS, BPO, CA, CAB ABSTRACTS, FACCTS, Global Books in Print, GPO, IEL, SCI, LISA PLUS, ULRICH PLUS and US Patents, etc. In House Databases are National Union Catalogue of Scientific Serials in India (NUCSSI), Indian Patent (INPAT) Database, Medicinal and Aromatic Plants Abstracts (MAPA), Indian Science Abstract.

Information Services

Major information services of NSL are

- | | |
|----------------------|-----------------------------|
| i) Readers Service | ii) Technical Query Service |
| iii) Copying Service | iv) Inter Library Loan |
| v) OPAC Service | |

7 Data Analysis and Discussion

The data collected from national libraries were tabulated as under.

7.1 Library Users

The details of each category of users of National Libraries are displayed in Table 1. Out of libraries surveyed, one library (NSL) did not indicate membership figures, being an information centre, NSL shows total no. of visitors per day. NAL has the largest number of users (800) followed by NML with 550 members

Table 1: Library Users

Members	NAL	NML	NSL
Students	300	200	NA
Research Scholars	200	100	-
Staff	250	200	-
Others	50	50	-
TOTAL	800	550	-
Average No. of Visitors per day	550	450	50

NA= Not Available

7.2 Library Budget

Table 2: Library Budget

Library	Books (Rs. In Lakhs)			Periodicals/Journals (Rs. In Lakhs)			CD-ROM/ Online (Rs. In Lakhs)			TOTAL Rs. In Crores (Including other items)		
	02-03	01-02	00-01	02-03	01-02	00-01	02-03	01-02	00-01	02-03	01-02	00-01
IARI	15	11	9	70	60	55	35	32	30	1.50	1.45	1.40
NML	11	11	10	N.S	N.S	N.S	N.S	N.S	N.S	7.22	6.65	6.10
NSL	3	3	3.5	61	60.7	60.5	28	21	22	0.95	0.86	0.88

NS = No Separate Data available

Adequate funds are necessary for growth and development of the libraries. National libraries spend significant amount for acquisition of books, subscription of periodicals, CD-ROM/online databases, and implementation of IT. The details of the budget of national libraries are presented in Table 2. The Table shows that NAL's budget for acquisition of books and periodicals during 2002-2003 was Rs. 85 lakhs followed by NSL with Rs. 64 lakhs, NML with Rs. 11 lakhs (only for books).

NAL and NSL libraries reported separate budget figures for electronic resources. NAL and NSL reported to have spent Rs. 97 lakhs and Rs. 64 lakhs respectively for CD-ROM/Online databases.

7.3 Organisation of Information Sources

The table below (3) highlights organisation documents in the libraries, which indicate that cataloguing of books and bound periodicals all libraries have adopted AACR-2. However NML is using both CCC and AACR-2. As far as cataloguing of CD- ROM database is concerned, NSL claimed that they are organised in by alphabetical order, while NAL and NML have not responded to this query.

Table 3: Organisation of Information Sources

Library	Classification			Cataloguing		
	Books	Periodicals/ Journals	CD-ROM	Books	Periodicals/ Journals	CD-ROMs
IARI	UDC	UDC	-	AACR-2	AACR-2	-
NML	DDC	Alphabetical	-	CCC & AACR	CCC & AACR	-
NSL	DDC	Alphabetical	Alphabetical	AACR-2	AACR -2	Alphabetical

7.4 Library Professionals

The details of library professionals available in National Libraries are presented in Table 4. Out of 3 responded libraries, NML has the largest number of 62 staff members followed by NAL (IARI) with 52 and NSL with 11. The investigator also observed that all National Libraries are facing shortage of library professionals from 30 per cent to 55 per cent.

Table 4: Library Professionals

Total no. of staff	IARI	NML	NSL
Library Professionals	37	12	5
IT Professionals	N*	N*	N*
Non-Professionals	15	50	6
Trainees	N*	N*	N*
Total	52	62	11

*N = NIL

7.5 Availability and Period of Usage of Computerised Services

In order to obtain the progress of implementing automated systems for housekeeping operations and services the survey offered a list of functions and asked respondents to reveal the present use of modern technologies in management of various information services in the National Libraries surveyed.

Tables 5 and 6 show the data collected pertaining to the subject.

It is seen that NAL and NSL have a computerised catalogue system. It is noteworthy that NSL provides Online Public Access Catalogue service to its users. The table also indicates that Internet, CD-ROM/Online database service, computerised catalogue collection acquisition are the first IT-based service that have been started for more than 6 years also among the surveyed libraries.

Table 5: Availability and Period of Usage of Computerised Services -1

Libraries	Acquisition		Catalogue OPAC		Circulation System		Periodical		E-Journal		Internet	
	A	U	A	U	A	U	A	U	A	U	A	U
IARI	N	-	Y	1	N	-	N	-	N	-	Y	8
NML	N	-	N	-	N	-	N	-	N	-	Y	6
NSL	Y	4	Y	>7	Y	3	N	-	Y	7	Y	6

Table 6 : Availability and Period of Usage of Computerised Services -2

Library	E-CAS/ SDI		CD-ROM/Online Databases		Reference System		Translation		Accounting/ Management		Other Services	
	A	U	A	U	A	U	A	U	A	U	A	U
IARI	N	-	Y	7	N	-	N	-	N	-	Y	2
NML	N	-	Y	6	N	1	N	-	N	-	Y	1
NSL	N	-	Y	7	Y	5	Y	6	Y	3	-	-

A = Availability, U = Period of use, N = Not in use, Y = Yes

7.6 Retrospective Conversion of Catalogue

In order to know the extent, the library catalogues were converted into machine-readable form, respondents were offered choices and asked them to indicate how much of their catalogue has been converted in to machine-readable form. The libraries such as IARI and NSL have converted all their bibliographic data into machine form, whereas NML is in the initial stage of preparation of computerised catalogue.

7.7 Charging System

To know the usage of charging system among national libraries in respect to different national types of documents, analysis shows that only NSL is using computerised circulation system with Barcode technology. Further research reveals that NAL provides electronic information through both CD-network and LAN while NML and NSL provides through CD-network only.

7.8 Facilities Available in the Library (Software/Hardware in use)

Software packages play a key role for the success of library management. NSL have developed their own software package-Granthalaya as per their requirement. NAL and NML are using Libsys.

As far as the availability of multimedia facilities in the libraries are concerned, all the surveyed national libraries except NML have multimedia facilities.

The number of computers used in a library serves as an indicator of the level of implementation of IT on information management. To identify the types computer hardware available in the library the respondents were requested to indicate the number of computers, nodes and printers available and used in their libraries. The data analysis indicates that the libraries have a sizeable number of computer systems (Table 7)

Table- 7: Facilities Available in the Library (Software/Hardware in Use)

Facilities	IARI	NML	NSL
Library Software	L	L	G
Availability of multimedia	Yes	-	Yes
Availability of CD-Network	Yes	Yes	Yes
No. of systems	25	12	16
No. of nodes available at EIS	11	7	6
No. of printers available	4	7	8

L=Libsys, G= Granthala, EIS=Electronic Information Service

7.9 Networks to which Libraries have Access

Analysis also provides the names of network at the national and international level to which the libraries have access and connectivity. All surveyed libraries are participating in DELNET. But no library is participating with INFLIBNET. NML and NSL have NICNET connectivity while NAL has ERNET connection. It is encouraging to note that all national libraries have Internet connectivity.

7.10 Constraints in Implementation of Electronic Information Services

Implementation and maintenance of electronic information services of National Libraries is expensive, complex and a continuous process involving various constraints. In order to identify various constraints faced in the management of electronic services by National Libraries, the respondents were offered four problems, plus 'any other.' Table 8 highlights that all librarians (100 per cent) admit that they are facing various problems while implementing IT in various managerial purposes such as financial, managerial, shortage of trained manpower, etc

Table -8: Constraints in Automation Implementation

Problems	IARI	NML	NSL
Financial	√	√	√
Managerial	-	√	√
Personnel	√	√	√
Technical	√	√	-
Infrastructure	√	√	-
Others	√	-	√

7.11 Information Management Data Matrix

Information Management Data Matrix has been prepared by giving weight to each of the facilities and services concerned with management of information services at 5 points weight scale. The matrix has been prepared based on the Nolan's six stage of growth model. The matrix of the factor is described as below[8]

Table 9: Information Management Data Matrix

S. No.	Variables
1	Librarian's status: The weight to this variable is given on the basis of professionally qualified librarian's pay scale. The pay scale with 16,400= 5 full points, 14,400=4 points, 10,000 = 3 points, 8000 = 2 points, and below that but professional = 1
2	Institute's Central Computing facilities: with WAN(Intranet)= 5, with only LAN= 4, computing facility with only in library, LAN = 3, stand alone PCs = 1.
3	Library Computer Application Division = Division with Library OPAC Server, CD-NET Servers, Web Servers, PCs, Library Subnet = (1+1+1+1+1) 5 full points,
4	Access to Electronic Journals: 1-100 = 1 points, 101 to 300 = 2 points, 301 to 600 = 3 points, 601 to 1000 = 4 points, Above 1000= 5 points
5	CD-ROM Databases = CD-ROM-ERL Technology: LAN access, Budget Above 30 Lacs = 5 Points, Budget up to 20 lacs with 10 users access = 4 points, Budget up to 10 lacs 5 users access = 3 points, Stand alone = Nil
6	Bar Coding Technology = All Books & Users with Bar code Printer, scanner =5 points, Software with Circulation application = 4 points, Bar Coding of Books only = 3 points, under preparation =1
7	Division-wise library computerisation: (Acquisition = 1) + Processing = 1 + (circulation = 1) + (Serial =1) + (Administration & Maintenance =1) = 5
8	Library OPAC: OPAC with Books and Journals = 5 full points, only Books 4 points, only journals 3 points, 50% of Books 2 points, under preparation = 1 and others no point.
9	Integrated library software = 5 full points, In house = 4, CDS/ISIS = 2, others no point.
10	Library collection computerisation: above 1 lac = 5 points, 50,001 to 1 lac = 4 points, 25,00 to 50,000 = 3 points , 15000-25000 = 2 points, below 15,000 = 1 point.

Table 10: Information Management Data Matrix of National Libraries

S. No.	Variables	Matrix NAL	Matrix NML	Matrix NSL
1	Librarian's status	5	5	4
2	Central computing facility	3	3	3
3	Library computer application division	3	3	4
4	Access to electronic journals	2	1	5
5	CD-ROM database service	4	3	4
6	Bar-coding technology	1	1	5
7	Division-based library computerisation	2	2	4
8	Library OPAC	3	3	5
9	Integrated library software	5	5	4
10	Computerisation of library collection	1	1	2
	TOTAL	29	27	40
	Phase of Development	III	III	iv

Phase of Development at Nolan's six stage Growth Model of NSL is 4 ($40/50 \times 6 = 4.8$) Completed the Phase iv, which indicates NSL library is using more IT-based products /services for the management of library and Information activities and both NAL and NML at the stage of third, which shows these libraries are yet to implement more and more IT-based services for the management of library.

8 Major Findings

This part contains the inferences, which have been made after analysis of the questionnaire received from the chief librarians/ head of the libraries.

At Nolan's six stage Growth Model Scale (matrix), out of the three libraries under study, there is no national library available in Phase VI.. There are two libraries (NAL and NML), which are in Phase III of development and NSL was found in Phase IV. All the surveyed libraries have sound budget and two libraries NAL and NSL reported to have separate budget allocation for electronic resources. The study reveals that all libraries have a very exhaustive collection especially for journals and periodicals. NSL acquired the maximum of number of printed journals. All libraries are

providing Internet, CD-ROM and E- journal services with separate electronic information service centre facility.

NSL has the largest number of 1200 E-journals through consortia of E- Journals. No standardised and well-defined written selection policies for electronic resources are in the libraries. Analysis shows that only two classification schemes UDC and DDC are used in national libraries. Most of the libraries (Delhi) adopted AACR 2 for cataloguing of books and periodicals. NSL and IARI have computerised catalogue systems.

It can be seen from the analysis that only one library has converted all their bibliographic records into computer form and the rest are at various stages of progress.

It has been observed that Internet, CD-ROM online service and computerised catalogue are the first information technology that have started six or more years ago among the surveyed libraries. The activities and services of the at present NISCAIR is not providing online access facility to the users for its full text databases. All libraries except NSL are still using the card system for issuing books. LIBSYS (a commercial software package) is the most widely used software as NAL and NML are using LIBSYS. The software developed in-house by NSL is outdated. All surveyed libraries are participating in DELNET programme. All libraries have LAN facilities. It is also observed from the study that librarians are facing problems such as shortage of trained manpower, lack of funds and infrastructure facilities. No library is providing any training programme to their users to handle modern information services, which is an essential programme for a library.

9 Recommendations

In the light of the analysis and findings of the survey, the following recommendations are made in order to improve the information management activities in national libraries

It is recommended that scientific information resources in general and electronic resources materials in particular should be developed through an advanced selection policy. Under the sponsorship of or with active support by the Ministry of Science and Technology and Human Resource Development, an efficient National Digital Science Library should be developed as soon as possible. Such an attempt will greatly improve the utilisation of national digital resources, including the scientific resources. A National Agency should be set up by national libraries to advice the

librarians in adopting the modern electronic services. Electronic document delivery system should be introduced in NAL and NML. The problems for many users are they do not have the necessary skills to gain access to the information in a reasonable time. Libraries and information centres should provide more training for the use of electronic sources. National libraries should identify the non- users of electronic information sources and proper steps should be taken to convert them into potential users of electronic information services. The main suggestion for users under document collection has been made about the addition of more periodicals, especially in electronic form. All libraries should provide copying/printing facility at their Electronic Information Service Centre at minimum cost. Number of terminals should be increased for Electronic Information Services in all libraries especially at NAL. Proper checking system should be there to avoid the misplacing and loss of the documents. All national libraries should introduce a complaint/suggestion box to get proper feedback. To increase usage of Online/CD-ROM database search service, NISCAIR should drop user fees. survey result (users opinion) indicate that dropping user fees should increase the use of Online/CD-ROM database service.

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Marketing and Promotion of National Library Services

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Today we are living in an increasingly competitive environment where the libraries need to apply marketing techniques to prove that there is a return on investment, or increasingly library services provide added value to the users served. The paper provides a brief introduction, and focuses on important activities of the National Library; defines the concept of marketing and societal marketing; discusses the marketing strategy for marketing and promotion of national library services; provides some important methods to understand customer needs, as the customer is the core or focal point of the library; gives more stress on marketing plan which plays a vital role in marketing and promotion activities. In conclusion one may say that marketing techniques for promotion of national library services are essential.

1 Introduction

The changes all over the world are at the speed of light, changes in socio-economic and technological environment has dramatically forced the libraries to change their time- honoured old practices. In an age where we need to compete among the myriad of Internet content providers and fight for the limited attention span of our library users, marketing and promotion of library services are paramount to our survival.

Tremendous pressure for accountability and the emergence of corporate culture has led the libraries and information professionals to take aggressive actions for financial self-sufficiency. Hence, to be successful in today's environment of rapidly changing customers information needs, every library has to think, irrespective of type (it may be special library or National Library) and its customers for marketing and promotion of their products and services.

Libraries are basically service-oriented and non-profit organisations. Services are intangible, inseparable, variable and perishable. These special characteristics of services make their marketing more challenging. Even

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though most of the libraries have embraced marketing activities and to some extent marketing philosophy as well.

Today, users demand much and expect an immediate response for their inquiries. Many National Libraries feel compelled to acquire different services and products to serve. More skills, and more technologies to understand customers properly, meet their expectations, and maximise the use of library resources and services. National Libraries have been using various aspects of marketing and promotion such as publicity and public relations for many years. But the use of marketing as a technique for non-profit organisations is of recent origin.

National Libraries should achieve the proper balance between access and preservation, marketing and promotion of services to fulfil the present and future needs and requirements of customers without adversely affecting the research collections on which future generations depend.

2 National Libraries

“National Library is a place where a nation nourishes its memory and exerts its imagination—where it connects with its past and invents its future”.

The UNESCO defines National Library as “ *Libraries, which irrespective of their title are responsible for acquiring and preserving copies of all significant publications published in a country and functioning as a deposit library, either by law or under other arrangements*”.

National Library occupies the highest position in the national library system. We must also remember that national libraries do not have a unified origin; some came into existence to fulfil the objectives they discharge at present; others developed as a result of great donations of books; many have attained their present status through a gradual extension of their privileges and facilities to an ever enlarging patronage.

National Library is the library having the prime duty of collecting and preserving the national heritage, culture and literary products of the nation for posterity. It is the central station for assembling and disseminating thought energy.

It actively supports the development of ideas and creative endeavour, and the enjoyment of these pursuits. It undertakes initiatives to improve access to the national network of libraries, and it works to enhance services for all library users.

3 Concept of Marketing

"Marketing is the application of some common sense."

Marketing is not merely a function of selling but in reality it is the business of assuring the right products or service through the right means of promotion at the right price, at the right place through right media to the right customers so that the customers get maximum services and satisfaction.

Marketing will lead to a better understanding of the needs of different client segments; to a more careful shaping and launching of new services; to a pruning of weak services; to more effective methods of delivering services; to a higher scale of client satisfaction. Altogether, marketing offers a great potential to select organisations to survive, grow and strengthen their contribution to the general welfare.

For libraries, marketing means to create the demand for and interest in the use of the library resources and services among customers. Marketing of information services and products begins with assessment of user needs and ends with the satisfaction of the users.

American Marketing Association defines as:

"Marketing is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create, exchanges and satisfy individual and organisational objective."

The library is considered as a non-profit organisation. Therefore, it will be more appropriate to put its marketing strategies under the category of societal marketing. The societal marketing concept as defined by Philip Kotler is *"The societal marketing concept holds that the organisation's task is to determine the needs, wants, and interest of target markets and to deliver the desired satisfaction more effectively and efficiently than competitors in a way that preserves or enhances the consumer's and the society's well-being."*

This concept is more suitable to libraries because the ultimate aim of each library is to work towards societal development of the nation.

4 Marketing Strategy

Alfred Toffler, the well-known futurist, states, *"If you don't have a strategy, you will be permanently reactive and part of somebody else's strategy."*

Keiser stresses the need to determine the information needs of the users. This approach is good for services because it is customer-oriented and can be planned. It is a proactive approach. It can apply equally well to the question of what to do over the next ten years and, in highly simplified form, what to do tomorrow. Using the Kotler-Andreasen-Keiser approach involves a six-step marketing strategy:

1. The marketing environment
2. Information needs assessment
3. Resources assessment
4. Market opportunity analysis
5. The development of an operational marketing programme
6. The evaluation of the strategic marketing process

The effective marketing strategy is sinequanon to lead the marketing and promotion activity in any organisation. It enables organisations to change their internal functions with the external and volatile changes of a competitive global environment.

In August 2001, at the 67th Council and General Conference held at Boston MA, sponsored by IFLA's Section on Management and Marketing, Directors of National Libraries met to discuss the role of the national library in providing access to library collection within a burgeoning marketing industry and challenges faced by national libraries in building an effective strategy for marketing and promoting library services. The conference concluded with the following effective marketing strategies, which are;

- Develop a mission statement, ideally one showing the role of the national library in supporting national goals.
- Conduct user surveys both internal and external; convene focus groups; and collect data about programmes and customers.
- Improve services so that targeted users want to use the national library.
- Simplify the national library's message and points of access to avoid confusing or overwhelming users. Develop a national library Website that is easy to comprehend and navigate.
- Reallocate resources internally to demonstrate to funders that the national library has a clear sense of mission and a marketing strategy.

- Develop partnerships that support and reinforce the mission of the national library, e.g. cooperative programmes with museums and archives.

5 Understanding Customer Needs

Customer-focus is at the core of the marketing concept. Putting the users first, give them what they want. Customer-centred approach is now seen as a route to gain competitive advantage by library and information professionals because market-led services are striving to meet users' needs. Customer-focus is considered as the single most vital factor for success.

Customers/users are the central entity in all types of libraries. Customer-focus is imperative for quality in libraries. The satisfaction of a customer is the primary concern in the marketing approach and the entire ethos and shared values of the library owe the responsibility of satisfying the customers. Also it should ensure that their products and services enhance the customer's ability to adapt to survive under difficult conditions. These products and services should also increase self-esteem.

Special libraries may tailor services to their specific target clients, whereas national libraries are catered to the general public at large. When national libraries attempt to be everything to everybody, they may end up working very hard at pleasing nobody at all. Because of their heterogeneous market requirements, satisfying the customers' needs of National Libraries can be very challenging.

Some methods to understand customer/user needs are:

Community Profiling – One method commonly used by the libraries to learn about their users is community profiling. This involves looking at the demographic and socio-economic factors either through primary data collected by the library system, or using secondary data such as an official census study, or published research done by external parties.

Library Survey/ Questionnaire – It is used to find out about the users knowledge, behaviour, satisfaction level and preferences. Libraries generally carry out interviews, personally or via the telephone, or increasingly, through the Internet. Besides superb question design and well-trained staff to administer the questionnaire, the optimal selection of a good representative sample is also vital. Libraries may need creative ways to include non-users or potential users in their survey sample.

Focus Groups – Small groups of people are often brought together to discuss new library or creative service delivery concept. Focus groups are

also used after a large-scale survey to provide further insights to the responses. Video and/or audio recording ensure that all the discussions are properly captured for review later.

Employing Technology to Conduct Market Research - Technology can be used to extract data from transaction log (of online content and OPAC searches), circulation records, as well as online user surveys and feedback. Further analysis of the data can lead to a study of user behavioural patterns or trends. To a certain extent, the use of customer relationship management software (e.g. People Soft) is employed to help market library services and products to the customers, especially for those fee-based services.

6 Marketing Plan

The first thing in marketing planning exercise is to break down your customer base into segments. A *segment* is a group of users who have a number of needs or characteristics in common. It helps the library to provide a service more effectively, tailored to their information needs.

On the basis of the market research done to understand the needs and expectations of the customers, that analyses the library's positioning in the market, the next step is to develop a marketing plan that lays out the actual process of marketing and promotion to achieve the goals and objectives set by the library. For an effective plan, relevant marketing activities targeted at the right user must be well coordinated, and executed by staff with the right calibre.

A good market plan begins with a mission statement that defines the objectives of the library, which includes an identification of the target market segments. Evaluation of the marketing plan is essential to make marketing and promotion activity more effective.

6.1 Marketing and Promotion of National Library Services

National libraries should have a proper marketing plan. It should strongly emphasise relationship marketing. Building an excellent relationship with the customer is possible by providing quality and effective service, creating a customer-friendly environment and effective staff training for customer care.

Marketing mix is a planned way of satisfying consumer needs and requirements. There are four elements of marketing (4 Ps) Product, Price, Place, and Promotion.

Product: A more accurate description than product is portfolio of services. It is used here in the sense of documents and services provided in a library, e.g. Reference, Bibliographic, Lending, and Internet services and products are Union catalogue, National bibliography, CD-ROM, and so on.

Price: Price is the charges imposed on some special library services or it may be fees to become a member of the library.

Place: It deals with the ways in which library service is distributed, in other words how customers access the library services and get the information they need. It covers;

- The quality and adequacy of the communication channels with users - face-to-face contact, telephone and E-mail
- Location and staffing of the enquiry point
- Layout, shelving, etc
- Ease of use and accessibility of the catalogue
- Physical environment of the library

Aim of the library is to make services pleasant and easy to use so that customers will both come back and also spread the word that this is the best way to get the information they need to do their jobs.

Promotion: It is more difficult to do marketing than promotion. If people do not know what you can do, they will not come and ask you to do it. Promotion comes in many shapes and forms.

Purpose of Promotion

- To create and maintain awareness among customers about the library services
- To launch new products and services
- To reach new groups of customers
- To increase the number of customers in a particular area
- To convert awareness and make use of the library resources
- To improve future campaigns and continue to keep up awareness

Promotion Activities

Promotion is another way of attracting the users to the library. Different promotional activities that the national library can take up are as follows;

- * Brochure/presentation - How the library is beneficial for the users
- * Direct Mail/E-Mail - About new subject areas/new technology
- * Notice Board - Attract the users' attention
- * Website - Anywhere at any time information
- * Bulletins/Newsletters - Latest happenings in the library
- * Suggestion box - Find out what the users need
- * Logos and slogans - Customer is the king
- * Questionnaire - To get the feedback about the products and services.

Librarians will need to know that extra P's have been added to marketing mix considerations for service marketing:

- People* – the people who play a part in service delivery
- Physical evidence* – the environment for service delivery and any tangible representation such as brochures or delivery vehicles
- Process* – the activities by which the service is delivered.

7 Conclusion

One of the most frequent and certainly one of the most volatile pressures on management in all types of libraries are to focus on customers' needs and find the ways to satisfy them. Marketing allows creative souls to generate ideas for different ways of attracting customers and fulfilling their needs and wants. Marketing techniques are essential to maximise the use of library resources and services and can contribute to the future development of the libraries and information services as well as to ensure effective management and achievement of the objectives set.

National library should contribute to the development of international standards and emerging technologies to enhance services offered by libraries. Digital technologies and the Internet continue to provide national libraries with opportunities to reach new customers, to streamline and broaden their services, promote their information products and to work innovatively.

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Multicultural Diversities and the National Library Services

Devinder Kaur*

1 Introduction

The paper focuses on the multicultural character of India and the role of the National Library in fulfilling the information needs of diverse cultures, races, castes and communities. To make the services accessible across the country it suggests strengthening of bibliographic and document delivery services, networking of libraries, digitisation and preservation of documents, creation of Information Network for multilingual and multicultural diversities and a National Policy for the preservation of the cultural heritage.

2 India: A Multicultural Nation

India is a vast country, second largest in population, inhabited by different races, religions, speaking different languages, which are further divided into various castes, sects and sub sects. It is a birthplace of several major religions of the world and the meeting ground of many races and tribes. The country has definite geographic divisions and some of the religious and linguistic groups have a concentration of population in certain areas, which they consider their own. People of Aryan, Dravidian and Mongol races live in different parts, profess different religions, speak different languages and dialects. There are 19 official recognised languages and 1652 mother tongues in India according to the Census of India, 1991. During its long history of 5000 years various rulers with different systems of governance and practices ruled the country. Initially the means of transportation were not developed, as such people travelled from one place to another, intermingled with different communities and thus left their footprints on the culture, language, rituals, customs, habits and beliefs of the nation as a whole. It accommodates people of various faiths, beliefs, language and culture. Various types of mores, customs, ceremonies, myths and legends are believed in India and observed till this day. There are 29 States, 6 Union Territories, 25 major religions, over 200 languages and

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900 dialects "For any meaningful discussion on cultural policies or cultural activities in the context of India it is essential to keep constantly in view the complex, intricate and multi-layered cultural fabric of the country, both in time and space." (Vatsyayan, 1972).

It is important to recognise the multicultural character of the Indian society to achieve unity in diversity. A composite culture encompasses in its fold people of all castes, religions, regions and languages. It focuses on the unification process by crossing all barriers and disparities. The creation of a strong unified India as envisaged in the constitution ensures equality and India is one of the largest democracies, which represents unity in diversity. It is a bouquet of flowers in which each flower though different in colour and shape maintains its identity yet adds to the beauty of the bouquet.

In this multicultural diversity, it is important that the National Library reaches out to every nook and corner of the country and provides services through a network of libraries at the grass root level.

3 Role of the National Library

The role of culture has been signified by Mahatma Gandhi in these words: "I do not want my house to be walled and my windows to be stuffed. I want the culture of all lands to blown about my house as freely as possible, but I refuse to be blown off my feet by any one of them."

The role of the National Library is vital to provide a conducive atmosphere of understanding, mutual trust and faith in order to achieve unity in diversity. The National Library is a perennial source of food for the intellect as valuable ideas of philosophers, preachers, saints and the builders of the nation are available. A library is considered the 'temple of learning' where intellectuals and commoners come to quench their thirst for knowledge. For understanding the essence of all religions, to know the historicity of the great nations and for a deep understanding of different cultures, the National Library possesses the best literature of the past. It is that treasure of knowledge, which reveals to the explorer the wisdom of the past, the realities of the present and serves as a beacon light for the future. The documents in the library contain a variety of ideas of a cross-section of thinkers, which help to build up thought processes of the citizens of the country, have a holistic view and thus play a significant role in the development of the nation. The nation is confronted with linguistic, regional, religious, cultural and political diversities. To fully comprehend such

diversities in their right perspective, the National Library can play the role of catalytic agent and provide a composite view of culture, as it is the repository of cultural heritage. "Libraries as service organisations have played an important role in the development of man and his civilisation by preserving and transmitting the cultural heritage of ages. Libraries have been created by actual necessities in the modern civilisation and have a vital societal role in the development. Culture must transcend the individual whereby men in each generation possess, potentially at least, all that their predecessors have ever learnt. Books are one social mechanism for preserving the racial memory and the library one special apparatus for transferring this to the consciousness of the living individuals" (Butler, 1933). In this competitive world, where all kinds of barriers have vanished and the world has become a global village, a balance between cultural and competitive ability needs to be maintained as nations sustain and thrive on enduring values.

4 Role of National Library in Cultural Integration

The National Library has a significant role to play in the cultural integration of the country. To create a sense of communal harmony it is essential that citizens have access to the collective wisdom of the past. National Libraries are in fact the bedrock of a civilised society as they provide access to the best thoughts of the world. They play a major role in the nation-building process by putting into practice the best of the ideas propounded by great thinkers. For cultural integration the true spirit has to be imbibed in the hearts of the citizens by providing them knowledge about the cultural heritage of the country, which is housed in the National Library. Cultural integration can be achieved only when the people of the country are able to understand each other and lead a unified national life, where humanism, devotion, truth and tolerance are the watchwords. "National integration is born in the hearts of the citizens and when it dies no army, no government and no constitution can save it. Interfaith harmony and consciousness of essential unity of all religions is at the very heart of our national integration." (Palkhiwala, 1994).

5 Safeguarding Cultural Values

The recognition of the diverse needs of various segments of the society require adequate arrangement for safeguarding the interest of the majority as well as the minority. A variety of people inhabit India. They live together, wear different types of clothes, speak diverse languages, follow different religions, belong to different castes/tribes and act according to various norms.

To have a harmonious balance between the different cultures, people have a right to promote and preserve their culture and values.

The erosion of the value system of the society, the weakening of the bond in relationships and the mad race for material prosperity has necessitated that customs and rituals, which form the very fabric of culture must not be sacrificed at the altar of modernity.

There is awakening for the revival of the cultural identity of each group. It has been reiterated in most of the studies that the cultural identity is very important to the individual if the nation wants the cultural diversities to flower then it is important that individuals have access to the literature through which they can get to know their roots. Assertion of cultural identity has its manifestations in all walks of life. As such people of different communities express it through their religious belief, their traditions, customs and ceremonies. The media often represents the multicultural diversity of each region, state, caste and tribe and for true representation of culture, access to authentic documents (in any format) is essential. The National Library has the responsibility of making such documents available not in its depositories but at the local levels. The documents, which depict the cultural development of various communities should be duplicated, reprinted and made available in CDs and in DVDs. "Knowledge is the source of all power in the final analysis and wisdom is the only way of guaranteeing that this knowledge does not just serve a few individuals, but all mankind." Mayor (1980)

6 National Library Services

The National Library is a valuable resource of the country established to serve the past, present and future needs of the country. With this objective in view, it preserves the cultural heritage. In this direction the National Library has been making consistent efforts to build up its collection. It procures documents under the Delivery of Books Act, 1954 through purchase, gifts, and exchange.

The overwhelming production of documents, the establishment of different types of libraries and institutions of higher education and the community centres in the country have necessitated that the National Library should expand its services in order to ensure that the cultural needs of each community are taken care of. The National Library has been serving the needs of those who ask for it but a large segment of the population is unaware, unable to approach the National Library and too complacent to

get its needs fulfilled through the National Library. To fulfil the needs of the users the library should serve not only the elite class in the metropolitan areas but build up a mechanism to serve the remoter areas, link services with different libraries and community centres. The National Library can become an integral part of the requirements of the users through an effective library system in the country. In a UNESCO Seminar in 1955, Maulana Abul Kalam Azad said, "A District Library service will require support and guidance from a Central Library in every state. These Central Libraries must also be linked with one another and be part of an integral system with three National Libraries in Calcutta, Bombay and Madras, with the National Central Library in Delhi as the cornerstone of the edifice." (Kesavan, 1961). The present scenario of the library system in the country has not taken a concrete shape. There is a lack of a library system in India though a large number of libraries have been established in the country, which provide services in an isolated manner at national, state district, block and village level.

The role of the National Library has been discussed at various platforms and it has been recognised that The National Library is designated to collect, disseminate and preserve the printed material produced in the country. The aims of the National Library are:

1. Collection of printed material concerning the country, no matter where this is published and as a corollary, the acquisition of photographic records of such material that is not available within the country.
2. Acquisition and conservation of manuscripts of national importance.
3. Planned acquisition of reading materials of foreign origin printed or otherwise.
4. Rendering bibliographic and documentation services, both general and specified. This implies the responsibility to produce current National Bibliography and retrospective bibliographies on various aspects of the country.
5. Acting as a referral centre of full and accurate knowledge of all sources of bibliographic information and participation in international bibliographic activities.
6. Provision of photocopying and reprographic services.
7. Acting as a centre of international book exchange

Recognising the role of the National Library as a perennial source of knowledge it is imperative that it is in a position to fulfil its vital cultural role by meeting the multicultural needs of the people. The access to the right information and at the right time is crucial for overall cultural, social, economic and political developments in the country as information is considered the Fourth Resource. The National Library should expand its services by providing

- i. Bibliographic Services
- ii. Document Delivery Services
- iii. Digitisation of Documents
- iv. Identification of Nodal Agencies.
- v. Information Network for Multicultural and Multilingual Resources
- vi. National Library Website

6.1 Bibliographic Services

The National Library should strengthen its bibliographic service, as it is the backbone of reference service. It should provide thematic bibliographies on demand to any individual and to all the Central State Libraries, who can disseminate these services to their clients. The CDs of the INB should be prepared and distributed to the interested libraries. The collections of the different catalogues already prepared by the National Library and its retrospective conversion should be taken up on priority. The availability of online catalogue through network should enable the libraries to download the relevant information.

The IGNCA has collected slides and microfilms of illustrated manuscripts, miniatures etc from different archival libraries of India. It is suggested that a Union Catalogue of all illustrations and miniature paintings be prepared and published for the benefit of scholars and libraries to acquaint them with our rich national heritage and culture. (Siddiqui, 2002)

The National Library houses documents containing the ethnic history of different communities, which may be of rich cultural significance for those communities. For providing access to such documents the CDs should be prepared and sent to their local libraries.

6.2 Document Delivery Services

The ILL services are being provided to selected libraries of the country, but this service must reach every nook and corner of the country. All the

Central, State and Public Libraries must become members of the National Library and provide ILL services to the District, Local, Rural and Community libraries. DELNET has already emerged as a nation wide effective Document Supply Centre. The National Library can coordinate with DELNET for supplying of documents and photocopies of articles.

6.3 Digitisation of Documents

The National Library has already taken up the scanning and archiving of rare and brittle books and other documents published before 1900 and Indian Publications of pre 1920 publications. The digitisation work of the records available in libraries through out the country should be taken up in phased manner. As a preliminary step the National Library should identify such documents through a questionnaire, which should be circulated to all the Central State Libraries who can identify the documents and send the list to the National Library. This work should be taken up in a phased manner keeping in view the following factors:

- i. How rare is the document? What is its value?
- ii. Language of the document
- iii. Condition of the document
- iv. Where is it housed?

A consolidated list of documents of rich cultural value should be prepared region-wise and for their digitisation, the Department of Culture should allocate separate funds.

The Preservation Cell of the National Library is actively engaged in preserving the manuscripts. Simultaneously it should circulate printed catalogues of all those manuscripts, which have been digitised under its digitisation programmes. For this it should coordinate with the National Archives of India, which provides financial support and technical assistance in the preservation of the documents to different libraries. The National Library and National Archives of India should frame a National Policy for Preservation and Digitisation so that all those documents, which require microfilming and digitisation are identified and their catalogues are made available to libraries across the country. This will avoid duplication of work and saving of finances.

6.4 Identification of Nodal Agencies

The National Library should identify those libraries as nodal agencies which are resourceful in collections on history, culture and literature of a

particular region, community, e.g. Punjabi Reference Library at Punjabi University, Patiala collects all literature on Punjab History and culture, Sikhism and Punjabi Language and Literature. The records of this library form a part of the National Bibliographic Database of DELNET. The Libraries of Sahitya Akademis should also be identified to serve the literary needs of the various regions.

The collections of the subject-oriented libraries in the country like National Science Library, National Medical Library, and National Agricultural Library, etc. should also be within the reach of the users, these libraries should fulfil the need of the researchers and form a part of the Integral Library System.

It is a hard fact that despite several literacy programmes and campaigns, a large segment of the population in the country is illiterate and is unable to speak in any other language except its mother tongue. But it is pertinent to mention here that customs, beliefs and rituals of this segment of the population are of immense value to the nation. Therefore, oral history units need to be created in close association with the community groups to preserve their cultural heritage after documenting, editing and then publishing for posterity

Personal records are a valuable source of community culture. Normally a particular community may not like to part with such records but for the sake of preserving the National Heritage these records available with the communities should be digitised and collected through persuasion. A project for preserving the National Heritage of the country should be prepared for collecting data from multilingual books, photographs, newspapers, ethnic history and personal collections of different communities. A separate grant for the preservation of Community Heritage will have to be earmarked by the Department of Culture.

It should coordinate with all Central State Libraries, University Libraries, cultural societies, academies and Libraries of the Department of Culture. The Non-Government Agencies (NGOs) are functioning and contributing substantially to social welfare activities and thereby serving the national cause. The National Library must also coordinate with NGOs, who can assist in carrying out the following programmes:

- i. Arranging talks on eventful days and important themes.
- ii. Showing Documentary Films and organising Radio Talks.
- iii. Arrange Mobile Exhibitions.

- iv. Creating Oral History Cell.
- v. Collecting personal collections of communities.

6.5 Information Network for Multicultural and Multilingual Resources

The National Library procures books on all Indian Languages, which are received through the Delivery of Books and Newspaper Act 1954, gift and exchange. There are documents, which have multicultural and multilingual importance. Translations of classical works should be accessible from the National Library. For this, a database of writers and translators will have to be generated. There are certain works, which are proscribed from time to time due to social, religious and political reasons; the National Library should maintain a unit for such works so that their availability at a later date is not lost.

The collections, scattered in different types of libraries across the country having cultural value, must be preserved for the coming generations. The individual libraries should be asked to submit a list of such titles to the Central State Libraries for further transferring the data to the National Library.

An Information Network for these multicultural and multilingual resources should be generated for which multilingual software need to be prepared. INFLIBNET has already developed Union Databases for books and other documents. The network should encompass in its fold the university libraries through INFLIBNET and others through DELNET. Through this network the services can be provided to various libraries on multicultural and multilingual resources. The Indian Museum Library contains a unique collection of about 50,000 books and journals mainly on Indology, History, and Art, Archeology, Anthropology and other branches of Humanities and Science (Sarkar, 2002), therefore, for catering to the multicultural needs it should network with the Indian Museum Library and Libraries of Indian Council for Cultural Relations.

6.6 National Library Website

The National Library services must be demonstrated throughout the country in order to make the records available to the people. The National Library has already created a Home Page of its services on the Website, which is accessible only to those who have access to the Internet. Distributing attractive posters in various parts of the country can augment the value of the Website. Such posters can be displayed in the State, Central,

Public and even the University, College and School Libraries. The posters should display the aims of the National Library and significant services along with the Website address.

7 Suggestions

The National Library should be at the apex of the Library System of the country. The Central State Libraries should be linked up with one another through a network and the National Library should be a part of the Integral Library System.

The National Library becomes a part and parcel of the needs of the nation through its effective library system. For this purpose all the Libraries of the Department of Culture need to be connected through the Network system.

For dissemination of information, the National Library should identify nodal agencies, i.e. Libraries, Community Centres, Literary Societies, etc.

For effective document delivery service it should extend the membership facility to all the public libraries, this will strengthen Inter-Library Loan Services. It should coordinate for ILL with DELNET, which is already providing this service.

For enhancing the value of the documents available in the National Library, Indian National Bibliography should be prepared in a CD and printed format and distributed to the member libraries. It should make optimum use of the IT applications in every activity of the National Library, viz. digitisation of the documents. Networking, preparation of CDs of catalogues of different collections and publicity through Websites.

The National Library should provide support and training in the preservation of the documents to different libraries in the country. It should also coordinate with the National Archives of India, which already provides financial support and technical assistance in the preservation of the documents.

The digitisation and preservation of documents should be taken up in collaboration with the National Archives of India.

For retrospective conversion of the library catalogue in the standardised format it should coordinate with DELNET.

The National Library should collaborate with the existing networks for the preparation of Multilingual Software.

An Oral History Division should be created at the National Library with its units in different parts of the country

The National Library should form National Heritage Council consisting of eminent historians, literary personalities, social scientists, scientists and librarians,, which would set guidelines for Programme of Action. A National Policy for preserving the National Heritage of the country should be prepared.

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National Digital Library of India: An Overview

I. C. Bandi*

This article is a framework for the establishment of a National Digital Library in India. Objectives, functions and characteristics of the NDL are discussed here effectively. Overviewed structure, standards and issues of the NDL may be considered important aspects of this article. Software and hardware requirements for the NDL are of practical view. National Digital Library services are based on present and future information requirements of the nation.

1 Introduction

Information Technology is pervasive and also dynamic in nature. India is one of the technologically developed nations and most of the information sources are gradually being published in digital form. The advantages of digital sources have made an impact on the role of library and information professionals as well as end users. National Digital Library (NDL) formation in India is very necessary and also important to cope with the technological developments in generation and utilisation of information. The NDL is the place to provide the required documents directly to the users on the screen enabling the users to interact with digital information. NDL can revolutionise information dissemination with respect to access, speed and availability. The greatness and success of NDL depends more on the strength of its services and its ability to connect electronically with other important national and regional libraries in the world. The evolving and emerging trends in the application of digital media and ubiquitous distribution of information are compelling the libraries to undergo a substantial structural change. The basic concept behind the NDL is storing and sharing the resources globally for providing right and nascent information to the nation at the appropriate time.

The recent advances in Information Technology and exponential growth of data in digital form have created an intensive interest in techniques

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to assist the users in locating the desired data. NDL is a structured storage environment of digital data with a consistent format for index and content abstraction.

The goal of NDL initiatives is to dramatically advance the means to collect, store, organise and use widely distributed knowledge resources containing diverse type of information and contents stored in a variety of electronic forms. NDL requires a lot of attention and funding which resulted in many projects and studies.

2 National Digital Library: Aims and Objectives

- To preserve and conserve all the significant literature, artistic and scientific works of mankind in digital form.
- Acquisition of material concerning the country wherever it is published and also acquisition of this record of information that may be available outside the country.
- Digitisation of rare collection of national importance.
- Development of network of important digital libraries in the country.
- Acting as a professional body to the library science professionals in developing IT skills among the working librarians in the country.
- Rendering digital bibliographical and documentation services of current and retrospective materials both in general and special.

3 Why National Digital Library?

- A national digital library collection helps in preventing duplication of efforts and wastage of scarce resources.
- National digital libraries have the ability to enable worldwide access to a never-ending supply of distributed information, which is constantly and conveniently available and updateable.
- National Digital Library supports propagation and integration of nascent information. Multimedia and communication through networking (Internet) are two most significant components of digital libraries.
- National Digital Library sources will support distance learning, comparative study and training staff that needs reference.

- National Digital Library helps to avoid duplication in generation and collection of data by different agencies.
- More than one person can use digital materials simultaneously.
- It helps link with other texts through hypertext linkage. Digitised objects can be linked to other objects on the www allowing users to jump from one resource to another.

4 Functions of National Digital Library

- Content creation, storage, search and access, retrieval and preservation are important activities in the National Digital Library.
- National Digital Libraries are to generate
 - a) New type of information resources
 - b) New approaches to acquisition, classification and cataloguing and ensure the,
 - c) Intensive use of electronic systems and networks and dramatic shifts in intellectual, organisational and electronic practices.
- It evolves into an active medium of communication, which affects social work and information seeking behaviour of the nation.
- It has the ability to preserve and extend information for the next generation.

5 Characteristics of National Digital Library

- National Digital Library will store the information in digital form.
- Usage of communication networks to access and obtain information.
- Collecting information by either downloading on-line/off-line from a master file.
- Preservation, search and access, content creation and delivery are the phenomena.
- Reduced barriers of distances, timeliness, shared resources and content delivery.

6 National Digital Library Services

- Depository and repository of digital information sources.
- Sharing digital information through networking.

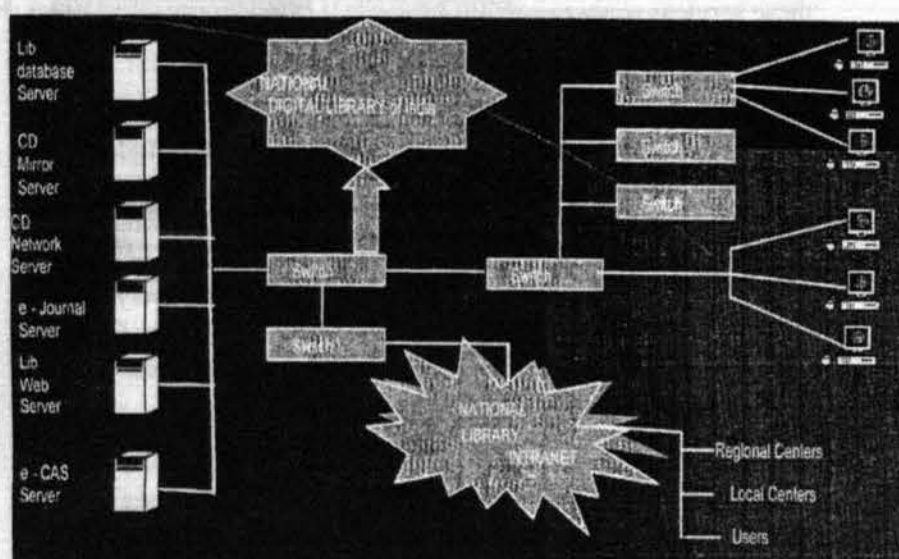
- Bibliographic control, translation, indexing, etc.
- Consultancy/training service to the library professionals.
- Centre for cultural and technical heritage of the country.
- Handling E-mail questions, making special interested groups, and providing on-line FAQ's files. Conducting workshops and conferences may be common activities in the NDL. Apart from these services some personalised services to the end-users in which the following methods are most appropriate,
- *E-CAS (Electronic Current Awareness Services)*: CAS is a very much older concept in our traditional library and it includes some of the important services like SDI, Newspaper Clipping Service and Translation Service. These Services can be provided to the users in an effective way by means of E-mail facility. This is possible by creating E-profile to the users. E-profile may consist of user profile, document profile and matching up profile. The information is composed, which is tailor-made. This new form of information will be supplied to the needy.
- *Web-OPAC/ Web Publishing*: Web-based Online Public Access Catalogue is most important among the personalised services in the library. This service is very common in all digital libraries. This service is used to search and locate the documents. It also gives details such as how to get the status of the documents. In this service the user can obtain the bibliographic information with its details of availability. In this modern information era interface is fully based on Internet technology. Today's users have simplest access to Web-based information through so many retrieval software. There are a number of Web browsers like Internet Explorer, Netscape Navigator, etc which can serve the purpose. The server side requires Web servers like Apache and Scripting languages like PHP, Java, etc for Web publishing.
- *Client Server Solution*: Some of the information resources are not Web-based. Some of the vendor solutions are client-server model-based. This type of information resources requires the user to install separate retrieval software. The reasons for this are,
 - a) To have the protection against contents (copyright)
 - b) To have a control on number of users.

Difficulties in maintenance and upgradation problems are prevalent in this approach.

7 Requirements

7.1 Networking

The use of network in the modern library in its automation and other IT applications are common phenomena in the digital library.



National Digital Library Network

7.2 System Requirements

The system side requirements can be viewed as *Hardware* and *Software Requirements*.

7.2.1 Hardware

The capable and adequate servers with enough processors, memory and other resources must be procured for hosting different E-resources. NDL should have more than 8 servers with Pentium III processor with high-speed memory for different E-collections, E-applications, and Library Automation services. CDM (CD Mirror) server and Samba-based CD servers will be the new additions for hosting CD-images for scientific databases. From the client's side, a Pentium PC with minimum resources is required which must be connected to the network so as to have the desktop access to vital information resources from the library easily.

Summary of System Specification for National Digital Library	
Hardware Specification	Software Specification
<i>Server Side</i> Pentium III server (Dual processor) with 1 GHz clock, 256 caches 1 GB RAM and SCSI Hard disk, 52x CD Drive, All ion CD Mirror Server with 120 GB IDE, HDD and High Speed Network card.	Red Hat Linux OS 7.1, MYSQL, Apache Web Servers, Samba, Java Server, PHP, MS-Access, Microsoft Front Page 2000 Internet Explorer, Netscape Navigator, Adobe Acrobat Reader 4.0
<i>Client Side</i> Pentium III/IV machines with Min. 32 MB RAM, 4GB HDD, 8x CD and DVD Drives.	

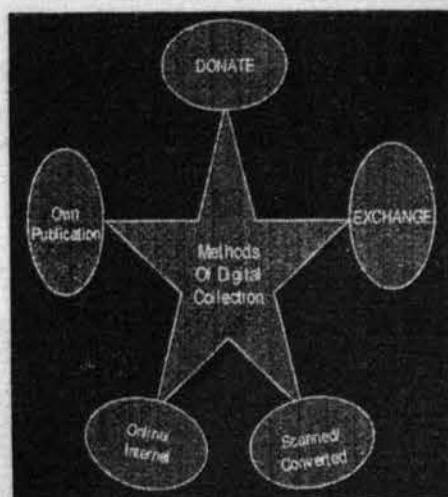
7.2.2 Software

Content Creation, archival, retrieval and their publishing require a set of software packages. Linux Operating Systems offers several packages to host E-collections. It gives a free database management package MYSQL for archiving E-documents and Apache Web server for hosting E-collection. Samba is another popular tool offered by Linux that can be used for CD-ROM Networking. The client side generally does not require any special software other than the Web browser like Internet Explorer, Netscape Navigator. Software tools and development kit can be freely downloaded.

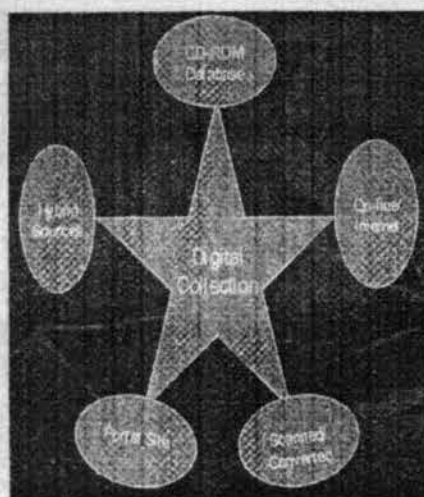
7.3 National Digital Library Collection

National Digital Library collection mainly depends on the donation and gifts by the digital information publishers in India and about India from anybody in the world. This collection can be developed and divided into the following types:

CD-ROM/Databases, Online resources, Scanned resources, Portal sites, Hybrid sources



National Digital Library Collection Methods



View of National Digital Library Collection

- CD-ROM/Databases:** Several full-text databases are publishing in the form of CD-ROM/Database and are very important sources in the digital library. CD-ROM networking technology is one of the popular methods to make multiple accesses on LAN, MAN and as well as on Web. This is an important source in the collection of National Digital information sources. The CD-ROM's collection includes books, research works, and projects done in the country and about the country by anybody in the world. These types of digital sources will be donated to the National Digital Library. To build the collection the most important step is to make mandatory to donate any digital source, which is of an educational purpose to the NDL. This can be possible by the *Digital Document Act* in India.
- Online Resources:** Most of the Indian popular publishers' publications are in electronic version and many are available on Internet full-text free of cost. NDL can make use of these sources by downloading from the Internet. There should be a law, which can help in getting free access to the online sources published in the Internet in the country and about the country anywhere in the world.
- Scanning:** Scanning is one of the important activities in digital collection development in the National Digital Library. To cope with the modern IT application most of the important information sources can be digitised such as manuscripts, maps, slides, and

one's own publications. National Library bibliographic publications can be made available in digital forms both nascent and archives by scanning the print documents.

- **Portal Site:** Portal means a gateway or entrance. We can include addresses of Websites, which are of interest to our readers of the National Library that users may come across these sites. If the user is interested to visit a site, he can directly click the address and he will be connected to that site. In this way our library can act as a portal site.
- **Hybrid Method:** By using these methods a database can be developed and user purpose can be served with digital information.

8 Standards and Protocols

At present the digital sources are available in various forms, formats and through different access points. This raises citation problems when the same material to be standardised to enable the end-user to retrieve information irrespective of the make of the machine. A common command information retrieval language which can work with any sort of computer and retrieval software may be useful in such situations. The following are some standards and practices that can be used in a digital library;

- **Data Handling and Interchange**
Graphics Formats- JPEG, TIFF, GIF, PNG, Group4 Fax, CGM
Structured Documents- PDF, SGML, HTML, XML
Moving Pictures/3D- MPEG, AVI, Quick Time, Real Video, Vivid Active, VRML
- **Metadata**
Resource Description- Dublin core, WHOIS++, Templates, Us-MARC, TEI Headers, other Open sources and Domain Specific Standards.
Resources Identification- URN, PURL, DOI, SICI
- **Security/Authentication**
Emerging E-commerce standards
- **User Interface**
Internet Explorer, Netscape Navigator or any common Web Browser can be used in interfacing the digital data.

- *Cataloguing and Classification*

MARC-21, CCF, DDC, UDC

- *Retrieving Document*

Z39.50 protocol can be used to retrieve relevant metadata from the catalogue records.

It is important to remember that standards are regularly reviewed and considered for reaffirmation, revision or withdrawal. Each revision supersedes the previous edition, making it imperative that the users ensure that any standards are of course the responsibility of the user and standards routinely include disclaimers to this effect.

9 Digital Library Issues

Integration and updating of IT and maintaining a fair balance between print-based and digital information. In spite of this some issues will arise which are,

1. Education and training to the professionals and end-users of the digital library
2. Issues related to copyright
3. Privacy and multilingual aspects of information.
4. Active collaboration between libraries, publication bureaus and computer centres in universities; as well as, between public and private sectors across the globe.
5. This may raise problems such as integrity, authenticity and stability of published data.

Section 107 of the Copyright Law includes illustrations of potential fair uses and describes four factors that must be taken into account, they are

- Character of the use
- Nature of the material to be copied
- Amount and importance of the part copied
- Effect on market for permission

Fair use of electronic sources also applies to

- Making copies of copyright works
- Making derivative works (digitisations)
- Electronic distribution
- Displaying and performing works publicly

To overcome these problems, many projects are underway. The ISI Electronic Library Project is developing a security and rights management system, which will take care at the client, and local and central server levels. The system provides secure viewing through session encryption and watermark, guaranteed document authenticity by means of digital system fingerprint and use privacy. But National Digital Library may have all those documents, which are donated or exchanged from the publisher. Hence these problems may not arise with the NDL sources.

10 Conclusion

National Digital Library will act as a bridge between digital sources and its users. In this present context a country like India should have a National Digital Library. Collection development and services of this NDL can be made available all over the country by means of networking with the regional centres located in Mumbai, Chennai, and New Delhi. Role of this NDL can be made very effectively by conducting training/workshops, conferences to the working librarians in the country. Formation of NDL in India will be an important task in the field of library and information science.

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National Library of India in the Digital Context: Strategic Directions

Jagtar Singh* and Meenu Sharma**

1 Introduction

Information and communication technologies (ICTs) have made a profound impact on the life and work of people. Telelearning and teleworking are new realities of the information driven society. There is a clear cut shift from stand-alone libraries to library and information networks; from printed publications to digital documents; and from intermediary to end user. National libraries are no exception to this phenomenon. In fact, we have reached a watershed mark where the benefits of ICTs can be easily harnessed in favour of society at large. The life and culture are being transformed by information and communication technologies in a profound manner. In this information-driven society, we are faced with a situation where the cost of organising information is not less than the cost of producing the information. In this digital world, therefore, the main role of librarians is to create knowledge out of information and convert that knowledge into information by the process of value addition. Physical collections preserved over centuries should not be replaced by the digital formats. Libraries, in fact, are metaphors of the world's documentary heritage and these metaphors link information to people, manage collections, provide access to information resources and services, ensure preservation for posterity, and facilitate continuous discourse of human minds.

2 The Watershed Mark

The National Library of India, since its inception, is serving as a permanent repository of the documentary heritage produced in India and about India by Indians or foreigners in different languages and formats. The main functions of National Library of India are in tune with any other national library that is to preserve national documentary heritage to provide access to it to the present and future generations, and to serve as a reference and depository library to facilitate international book exchange and

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bibliographic control. It is a must for a national library because without a national library, the cultural heritage is lost and without cultural memory a society cannot continue to function. It is also mandatory and important for the National Library to manage these publications both in printed and digital formats in this era of increased costs. Just procuring and housing library collections in multilingual fashion is not enough, rather a good national library is one, which preserves its collection in such a way that it be utilised in an optimal manner. National library is not a mere storehouse of books; rather it is a dynamic centre for people to interact with the world's knowledge. Therefore, National Library of India must make concerted efforts to digitise its collections to make these available globally on the pattern of below mentioned digital library initiatives of many national libraries of the world.

3 Digital Library Initiatives

Taking cognisance of the advantages of digitisation, such as globalisation of the local heritage, real-time access to pertinent information, word and image processing, digital reference service, non-linear access to information via hypertext links, access to electronic documents through external databases, and interactive and dynamic information metaphors, many national libraries have started digitisation projects. A bird's eye view of a few of them has been given below:

1. The British Library sees digitisation as a way to cover all material originally produced in non-digital form (e.g. printed matter of all kinds, manuscripts, photographs, drawings, paintings, sound recordings, microforms)
 - maximise use of the collections by facilitating a greater volume of networked access, both in the reading room and remote, and by providing the enhanced functionality intrinsic to the digitised items
 - Reflect national and international priorities for wider access to, and enhanced use of, integrated collections of digitised educational, cultural or scientific materials
 - Contribute to the conservation of original analogue materials for future users by substituting digital surrogates
 - Preserve the collection of analogue sound recordings
 - Generate income from those products with market appeal that can be exploited commercially by a partner, or the British Library itself, consistent with the aim of maximising accessibility to the collection

- Improving access to significant collections, both quantitatively and qualitatively, for all relevant communities with research and/or learning requirements
 - Avoiding the unnecessary duplication of digitisation of particular materials
 - Avoiding duplication of cataloguing and indexing
 - Allocating responsibilities for digitisation of particular materials to designated libraries and cost-effective preservation by the use of large-scale data storage technologies in collaboration with partner institutions. [1]
2. In USA, the Library of Congress started a program to create a national digital library in the early 1990s. National library worked in collaboration with the National Science Foundation and a number of other institutions, publishers, museums, educational bodies. It has now about seven million digital items from more than 100 historical collections in its American Memory Database and it is still growing. Not only this, it is promoting digital library initiatives and standards.
 3. The Bibliotheque Nationale de France has around 30 million pages in digital form and many of them are of the 19th century. Around 2 million pages are accessible through the Internet via the Bibliotheque's Gallica Web service.
 4. British library has also explored new digital possibilities. Planned a new building in 1990s, undertook a program of technical innovation to exploit new opportunities that technology is offering. Digitisation and advance image enhancement of the Anglo-Saxon Beowulf manuscript, digitisation of Gandahran Buddhist scrolls-2000 years old artifacts, which are the oldest south Asian manuscripts of any type. Also digitisation of patents, microfilms and sound archives. It is accessible via Virtual Book Shelf through its Website anywhere, any time by anyone.
 5. The electronic library service of the National Centre for Science Information System (NACSIS) in Japan provides an integrated system of bibliographic databases and electronic document delivery of Japanese Academic Journals on the Internet which are digital or digitised by NACSIS-ELS. Similarly, at the National Institute of Japanese Literature (NAJL), Digital Library System for Japanese

Classical Literature is being developed from a number of existing databases that includes full text movies, images and catalogues, with linkages between them to form a multimedia database.

6. In addition, NAJL has constructed a digital study system to allow full access to the users. New Zealand Digital Library is a research project of the University of Waikato with the aim to develop the underlying technology for digital libraries and make it available publicly so that others can use it to create their own collections. Researchers are developing methods for digital collection management, Maori, Arabic and Chinese language systems, internationalising the library interface, optical music recognition and musical collections and a whole range of interface and information-mining projects. There should be a transnational multimedia library that will represent the national cultures based on the principles of diversity, equity and respect for difference. [2]
7. Gabriel is the World Wide Web server for Europe's National Libraries represented at the Conference of European National Librarians (CENL). Information about individual national libraries is available via this gateway. It provides information about history, policy, important collections, and services of the national library concerned taken from a base file on Gabriel [3].

4 National Library of India

The National Library of India has also started the process of digitisation, but still a lot more needs to be done. The state-of-the-art is available via the URL <http://www.nlindia.org>. In the digital context, to provide global reach to national heritage a few suggestions for the National Library of India are given below:

4.1 Organisational Structure

With digitisation, though the problem of bricks and mortar library is by and large over, yet there is an immediate need to organise national libraries on a sectoral and decentralised basis. In the current dynamic environment influenced by convergence of ICTs, the key functions of a national library should be elaborated and properly communicated. The concept of one place national library will not work; rather a distributed national library network all over country would serve the purpose. The existing centralised system should be decentralised. Equity and diversity in national library services should be ensured. The functional organisation

should be based on essential, non-essential and desirable functions. The concept of sectoral libraries, such as National Medical Library, National Science Library, etc should be promoted. These libraries should play an active role to impart diversity and strengthen the collections and services of a national library. Even, the task of preparing language bibliographies should be delegated to the State Central Libraries. This will and reduce lessen the burden of bibliographical control on the National Library of India. In other words, the National Library of India should keep only that work with itself that cannot be done otherwise.

4.2 Leadership Role

The National Library should also play a leadership role in centralised processing, developing indexing languages, classification schemes, and subject indexing systems as designed by the Library of Congress. Bibliographical control should be the thrust area for the National Library of India. Indian National Bibliography (INB) must be digitised and put on the Web. Moreover, since many national libraries are working on MARC and CCF, there is an immediate need for such an initiative on the part of the National Library of India to provide an impetus to the standardisation of cataloguing practices in the Indian library culture. Ranganathan's philosophy and concept of a national library should be researched and expanded. Lessons learnt and best practices of the world's national libraries should be incorporated in order to manage the National Library efficiently and effectively. Vision, mission, policies, plans, programmes, strategies, tactics and policies should be carefully worked out to preserve and make available to the present and future generations, the wisdom, knowledge, and records of our glorious past. Gaps in collection should be filled up, and unnecessary duplication avoided and junk discarded. Digitisation has to be done. What is to be digitised and what will be the role of migration and emulation mechanisms in such an initiative must also be decided. The National Library catalogue and lists of rare materials, and recent additions to the library must be put on the Web. National Library of India must also initiate advocacy and lobbying for a national library and information policy in India.

4.3 Legal Deposit and IPRs

In India, the role of National Library to work as depository, repository, or service library should be clearly defined along with a strong back up system of state central libraries. Delivery of Books and Newspapers Act must be fine tuned to fit the changing information environment and implemented with an iron hand. With the advent of digitisation, Intellectual

Property Rights (IPR) issues have also become more important. Copyright concept should be explained and implemented adequately. National Library of India will have to obtain consent from concerned parties for digitisation of documents which are not in the public domain. It should also function as a nodal agency and role model for rights management related to intellectual property. National Library of India must also work out mechanisms to protect the documentary heritage of India because digital documents can be easily copied and commercialised if no checks are in place.

4.4 Insourcing and Outsourcing

Since digitisation has heavy financial consequences, there would be need for strategic planning for digitising the national heritage on priority basis. Insourcing and outsourcing for digitisation would be good strategies. There should be a provision for insourcing for digitisation which can be done in cost-effective manner on a long-term basis and outsourcing for that digitisation which is one time and not viable by insourcing. Outside agencies should be given a contract for that purpose. Financial implications must be worked out carefully so that liabilities are turned into assets.

5 Marketing of National Library Resources and Services

Marketing of the products and services of the National Library on cost-recovery basis would not be a bad idea. In the context of non-profit organisations, marketing means promoting resources and services of these organisations for public good. The Internet is an apposite mechanism for promoting the image and documentary heritage of the National Library of India. The National Library should also develop linkages with IFLA for its core programmes, such as UBC&IM, UAP, and PAC for materialising the vision of providing massive real-time access to world's documentary heritage. It must collaborate with OCLC, UNESCO and IFLA for preservation and conservation of the world's documentary heritage. 'Memory of the World' (MoW) and 'Blue Shield' are valuable initiatives of UNESCO and IFLA. National Library of India can also play a leadership role in developing a Portal for South Asia on the pattern of Gabriel (Portal for European National Libraries). This could be a very good platform for providing global market to national heritage.

6 Education and Training

Two developments have made a profound impact on the life and work. Firstly, the rate of obsolescence of knowledge and secondly, developments in information and communication technologies. Formal education and

training in this context is not going to provide a competitive edge to library and professionals (LIPs) *sine die*. There is urgent need for continuing education and training programmes to update competencies of the LIPs working in India. National Library of India should continuously organise short-term training courses, seminars and workshops on cutting-edge themes and technologies. Since a lot of cost is involved in terms of leaving the work place and travel time, efforts should be made to develop online training programmes so that these are available to anyone, anywhere at any time at the learner's own speed and convenience.

7 Conclusion

It is obvious from the above said overview that all the major National Libraries of the world are harnessing ICTs to their benefit. The National Library in India should make concerted efforts to globalise India's documentary heritage. In fact, it is high time that the world leaders must think in terms of developing a Transnational Multimedia Library (TML) with the help of ICTs. As the traditional constraints of space and time have been given a death blow with the cutting-edge technologies, the vision of a TML should not be a distant dream. Instead of using our precious resources on destruction, we must direct our resources and efforts towards the world's documentary heritage for present and future generations. Equity, diversity, and respect for other cultures should be the basic principles for materialising the concept of TNL. This may be a difficult but not a distant vision.

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National Library: Preserving the Library Materials

R. K. Perti*

1 Introduction

The National Library is a mecca for all those who wish to have an in-depth knowledge of India. A beginning to establish such a library was made by Lord Lansdowne, Viceroy and Governor General of India (1888-94) in 1891 when he directed that resources of all Departmental Libraries should be pooled with that of the Home Department, as the latter had already acquired the unique collection of books of the East India College and Fort William College. However, the beneficiaries of this library were the senior officers of the government. A step towards giving it a mandate to churn the process of learning amongst the people was taken by Lord Curzon, Viceroy and Governor General of India (1899-1905), who turned this closed library into a public library on January 30, 1903. He also amalgamated with it the rich and valuable collection of books and manuscripts available with the Calcutta Public Library. This library, as we call it today, was rechristened in 1948, a year after India attained independence.

The National Library is extremely rich in its resources, both in numbers and variety. This natural resource needs to be kept in good, healthy and usable condition for its current use and should also be passed on to the posterity. But the resources at its disposal are diminishing- be it manpower, materials or financial. Therefore, there is an urgent need to draw up a programme for their preservation on scientific lines.

The collection of books over here go back to the last quarter of the 18th century and the problem of their preservation is quite enormous and varied. It gets further aggravated when books/ manuscripts carry photographs, paintings and illustrations. These materials are mostly on paper, though some on palm leaf also exist.

2 The Factors for Deterioration

National Library has provided a congenial environment for ensuring longevity to the vast resources in its custody through air-conditioning the

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storage area and keeping the temperature and relative humidity under control. Here our precious vehicles of information are being saved from atmospheric pollution. But these materials have suffered badly over the years, when the ambient conditions were not available.

Basic constituent of our books is paper, which is mainly cellulose fibre based. Traditionally hand made good quality paper had been used for the manuscripts/books. This paper is manufactured by collecting cellulose fibre from raw materials like cotton, flax, hamp, alpha grass, straw, bamboo, rag and linen, besides using sizing and loading materials. This paper has long life as less of chemicals have been used for grinding, removal of stains or digestion of whole pulp. But now a days our paper is mostly produced by using mechanical wood pulp. This paper has short life and is a major worry for the librarians. The intellectual content of the books is available to us through creating impression by using different types of inks. The Indian black ink has had more of acidic content and has damaged the paper faster than the ink used by the printing presses. Besides these, the hard bound books have board, cloth pieces for binding, cotton thread for sewing, glue for pasting, etc. Each of these constituents are affected by natural conditions and in course of time when they are kept in the storage area.

Paper of books/manuscripts has lost much of its flexibility and has become brittle and fragile. It cracks and crumbles in the absence of moisture. It has got discoloured, as it had been exposed to heat and sunlight for a long duration of time. Dust in the atmosphere has hard siliceous matter. It is both unhealthy and cuts into the delicate fibre of paper through abrasive cutting action, when books are handled. Dust also helps in condensation of acidic gases and is quite conducive to the growth of many insects like silver fish, bookworm, book lice and the like. India's tropical climate combined with the high humidity of Kolkata has taken its own toll and damaged the books. We also have termites, the greatest enemy of all organic materials. If some of these have damaged the spine of the books, others have damaged the paper and even destroyed it. This has obviously reduced longevity of these materials. Active infestation of these materials by biological pests, whenever noticed needs to be looked into urgently.

3 The Preservation Methods

Appropriate action has to be taken to kill them by fumigating the materials with inert gases, which are also least harmful to the personnel of the library that handles them or with thymol, depending on the requirement of the situation and nature of damage.

Paper of books is acidic in nature and it needs to be neutralised for ensuring longevity. Mass de-acidification of paper materials has been suggested when the problem is widespread. But these are hazardous in nature and call for installation of costly equipment and expertise. However, since we have neither the technical know-how nor the resources to go in for such a resource, we have to look for less hazardous and cheaper methods for their de-acidification with ammonia gas or solution of calcium hydroxide or calcium bicarbonate. But their use would depend on the nature of ink used for writing and the strength of paper. In any case de-acidification or treatment of individual items is an extremely slow process and needs to be reserved only for selected and precious items.

Illustrated books and manuscripts are a class by themselves. Their seminal content has no doubt been reproduced a number of times over the years but originals of these are precious specimens of art and history. In fact, their original form is more important than their information content and deserves to be handled and preserved carefully. In case it is not possible to preserve them an effort needs to be made to seek help of modern technology and preserve their facsimile reproduction by microfilming them.

Palm Leaf, as the name suggests, are on an organic material, which is adversely affected by extreme variation in temperature and humidity. They crack and crumble, while handling, especially as they have lost their moisture content. At times, they have formed a solid block by virtue of their being kept for long in moist atmosphere. They need to be separated. In case the ink is bleeding, they are put in hot liquid paraffin and then washed with acetone. However, if ink of the manuscripts does not bleed, they are placed in hot water containing glycerine and separated after they have regained their flexibility. Then they may be re-inked by rubbing graphite powder with cotton pad and removing excess of carbon by cotton swab. They may also be fumigated, if they are infested by book worms. Damaged manuscripts may be repaired by using chiffon and placing each leaf separately in an envelope made of hand made paper and keeping the leaves in boxes slightly bigger in size than of the leaves themselves.

Library materials have over the years grown in the form of films, film strips, microfilms, and microfiche. New information media in the form of audio-video cassettes, computer and optical discs have been generated. They all present the problem of preservation. Films are basically gelatin-based and are susceptible to separation from the emulsion on which image is printed, when there is excessive heat around them. Moisture results in foxing

of their surface and makes the printed portion illegible. Dust and light also adversely affect them. Cellulose nitrate films of bygone days have suffered badly from poor atmospheric conditions. But acetate cellulose films that have superceded them also deteriorate though this process is slower. Polyester films, which we use now, offer still better prospects for longevity though we cannot say it quite conclusively. Nevertheless they are also in constant danger of getting scratches due to ineapt handling, while storing or using them or fading due to prolonged exposure to heat and light. Loss of information on this media can be overcome by preparing two copies of films. While the master copy may be used only for duplicating purposes, the other could be used for consultation purposes. Care, however, has to be taken that the master copy is prepared by using silver halide microfilm only, as it has a much longer shelf-life. These films should be kept in a temperature and relative humidity controlled area. They should be kept in an upright and vertical position. Besides, care has to be taken in handling them, especially in respect of fingerprints smudging the printed area of the films, lest they should get damaged.

Audio-video tapes and computer-generated discs are no less prone to damage and deterioration. We have to ensure that magnetic tapes are played periodically and handled carefully lest they drop and suffer irreparable loss. They should be kept away from the magnetic field and stored at a place where we have controlled temperature and humidity and is not subject to vibrations. Similarly, considerable effort is needed to protect recorded digital data on floppy discs from any damage through dust, grease and dirt or improper handling. Optical discs, on the other hand, can withstand high wear, but they need to be stored properly. They should also be visually inspected for corrective action and copied to increase their life span.

4 Prioritisation

It is conceded that librarians at the National Library are not experts in preservation and conservation of library materials. However, it is desirable that they should be well conversant with the constituents of materials in their custody and the steps that need to be taken to ensure their longevity. They have to get these materials suitably repaired and keep them for use of posterity. Since all materials cannot be preserved for all times to come, there is an urgent need to prioritise the materials that need repair and preservation and streamlining of housekeeping methods.

It should be noted that the National Library has conservation and microfilming units. It is desirable that the former unit concentrates on doing

minor repair of damaged materials by using good quality materials only. However, whenever books/manuscripts require major repair, there should be no hesitation in seeking the assistance of the National Archives of India, where the requisite materials for their repair and well-trained manpower are available to take care of them.

Since the National Library is the apex library in the country, it is desirable that its conservation unit is placed under the charge of a qualified and trained paper conservationist. Its training programme for budding librarians and those engaged in repair and conservation of library materials should be so oriented and organised that they are able to take full advantage of it and undertake regular maintenance programmes. In fact, this programme should be utilised for spreading the library movement in the country and saving our books and manuscripts from getting lost to posterity.

5 Conclusion

The social responsibility of the National Library no less calls for creating awareness amongst its users about handling these materials. Exhibitions of books, etc. organised at regular intervals should provide information on various subjects and areas of study. But it needs to be emphasised that these opportunities should earmark an area where users are made aware of the techniques that ensure their longevity. Bookmarks, posters and pamphlets with a message printed on them could be published and freely distributed amongst the visitors. Audio-visual programmes can be organised on these occasions. Besides, such events should be used for apprising the users about the best methods of using these materials and the manner in which they should discharge their responsibility towards current and future users of these materials. This enunciation of a two-way programme would create a better environment for preservation of library materials and create fewer problems for the librarians.

Planning a National Library System for India

Kalpana Dasgupta*

1 Introduction

The paper examines the need for setting up National Library systems and describes the efforts of some countries which have successfully set up National Library systems. The need and feasibility of India's National Library system and status of National Library of India as the hub of the National Library system in India are discussed.

2 Need for a National Library System (NLS)

The role and functions of a National Library has been often discussed and many national and international bodies have argued this in various ways. However, the core activities which every National Library is expected to do are:

- 1) Collect and preserve the written cultural heritage of the country.
- 2) Prepare the National Bibliography.
- 3) Develop a collection of valuable foreign literature.
- 4) Be responsible for national and international exchange.
- 5) Act as the centre for bibliographic services.
- 6) Work as the centre for inter-library loan and national and international lending.
- 7) Participate in standardisation of technical processing and bibliographical standards.

There are many other functions which are performed by national libraries in different countries in accordance with the situation and need of the country. In developing countries many National Libraries also act as a central public library while in the USA and Japan the Library of Congress and National Diet Library have responsibilities towards the legislature.

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The National Libraries in most countries have interesting historical backgrounds. These institutions have mostly developed from Royal libraries or collections of individual scholars or great personalities. The organisational structure of the National Libraries have very often reflected the political and developmental stages of the countries. Most of these have been prestige institutions set up to be representative of the country's cultural and historical heritage.

In the present complex society with its huge dependence on technology, there is a constant need for improving the dissemination of information processes. All forms of democracy need greater understanding of the society as well as the relationship between national development and information availability for progress. Though the traditional concept of libraries as a store of books to be carefully preserved for occasional use of scholars of repute is still valid in most libraries, it has been enhanced by that of a more dynamic role of organiser and disseminator of information. To cater to the rising diverse expectations of users, this role requires much more than setting up of a storehouse and preservation unit of documents because after the written or printed record had served for thousands of years, many other forms have acquired equal importance in an astonishingly short span of time. Therefore, the National Library alone cannot suffice as the institution of national importance within the growing information sector.

Each Library and Information Service (LIS) stands in relation to its own users, but no LIS can regard itself as self-sufficient, however broad-based and comprehensive it may be. All major components of LIS are interdependent because of the growth of research and publication, user awareness and high expectations, parallel economic pressures which threaten the economic viability of any system. It will need more than one organisation or a network of organisations staffed by trained people, expert in modern techniques of handling documents and of exploiting to the full the information they contain. Such an organisational structure should be planned as a system and constantly re-evaluated in relation to all the activities of society, which need access to information for their own efficient functioning. While planning such a system especially with the existing National Library as the hub, some major responsibilities have to be kept in the forefront:

- 1) Streamlining of services and standards for the various LIS sectors in a decentralised manner.
- 2) Planning resource utilisation in the major LIS sectors and avoid duplication of efforts.

- 3) Developing resource-sharing networks for cataloguing, bibliographic services, and inter-library loan.
- 4) Organising need-based research and training programmes at the national level.
- 5) Fostering a healthy LIS profession at various levels in close cooperation with professional associations specially those at the national level.
- 6) Developing a healthy relationship with the book trade and information industry.
- 7) Setting up linkages with international organisations and major national library systems of the world to open up cooperative ventures in the field.

To actually set up a NLS on these lines there are the following factors:

- 1) Whether the country is administratively centralised or federal and the status of LIS as per the Constitution.
- 2) The state of telecommunication, postal services, other infrastructure and geographical factors.
- 3) Established strength of sectoral, local and national LIS.

3 Emergence of National Library System in Different Countries

National Libraries which are established by a country's authority to perform important national functions are now an accepted reality in most countries. The first National Library with the main function of collecting and preserving the nation's written heritage dates back to the Bibliotheque Royale of France in 1537. Though most National Libraries have long ancestry, over the years different types of national libraries which are complemented by other subject and activity-oriented national institutions have developed in many countries. The Library of Congress is primarily a library for the Congress and it is recognised as the National Library of the US as also the National Diet Library of Japan. Since many National Libraries which carry a legacy give special emphasis to the Arts, Humanities and the Social Sciences, many countries have separate national scientific and technological centres which provide scientific information and dissemination services.

In some European countries and Asian countries the National Libraries serve as the University library or vice versa and in many countries in Asia and Africa the National Libraries double as public libraries. A few countries

have two National Libraries, rational level scientific libraries, multiple deposit libraries and more than one National Library in one country. Italy has two National Libraries, in Florence and Rome; US has National Medical Library and National Agricultural Library; UK has the British Library, the National Library of Scotland and the National Library of Wales and Denmark have more than one deposit libraries. In spite of these diversities most National Libraries are involved in the core activities of collection of the nation's literature; act as legal depository, publication of the national bibliography, inter-library loan and bibliographic services, conservation of the national heritage, collecting need-based foreign literature. Though the national libraries have been performing these core functions, the future status of National Libraries may be threatened unless there is extension of services and activities in cooperation with other institutions at the national level. It is interesting to note that the Dainton Committee which was responsible for setting up the British Library in UK in the early 1970s, took the view that the National Libraries must be seen in relation to other parts of the National Information System. They identified various aspects of Library and Information activities where there was a need to coordinate the efforts of many libraries and institutions in order that the substantial total resources involved would be used in the best possible ways.

The British Library was formed after many bodies, i.e. different libraries and library departments were brought together. The official announcement stated that the objective of the British Library should be to preserve and make available for reference at least one copy of every document of domestic origin and as many overseas publications as possible; to provide efficient central lending and photocopying and other bibliographical services. Also, the British Library's cataloguing service can be utilised by any library in the UK. It seeks to coordinate and standardise procedures leading to the concept of a national bibliographical database. Networks have been created out of the need to establish efficient ways of delivering British Library services. Internationally the British Library plays a significant role in LIS planning at that level through its membership of appropriate bodies of IFLA and such organisations. It is also involved in the work of the British Standards Association and other organisations. The British Library is not considered the 'Apex' of the British Library system but is regarded as a hub of the LIS in Britain. It is managed as a national centre for reference, study and bibliographical and other information services, in all subject areas which includes Science & Technological disciplines as well as Arts, Humanities and the Social Sciences. There are

initiatives in different countries to have a workable National Library system in several parts of the world.

The Canadian National Library service has a planned systematic approach for network development and other cooperative measures. The National Library of Canada was established in Ottawa in 1953. The precursor of the National Library of Canada, the Canadian Bibliographic Centre which was set up in 1950 basically undertook the main activities of identifying, collecting and recording publications written by Canadians and items published in Canada or about Canada. It also sought to compile a catalogue of the holdings of the major libraries in every region of the country. The accomplishment of these objectives depended on cooperation with other organisations nation wide and use of the most up-to-date technology. It was also felt that inter-library cooperation and the promotion of Canadiana can form the basis of a national level system to improve library and information service in the local and rural communities. To achieve a coherent network, the systems had to be based on international standards that allowed exchange of records and their integration into cooperative databases and for retrieval of information through both English and French search strategies. The National Library of Canada emphasised Canadian studies, multilingual Biblio service; book exchange of surplus books among libraries; coordination in collection development. The National Library of Canada defended a federal library system and continues to practise leadership in international standards and best practices to ensure the best possible services to its users. Today the National Library of Canada supports initiatives and applied research and contributes to the development of federal policies in areas related to library and information services in Canada. National plans and policies are developed through consultation with professional associations and professionals working in areas such as: the information highway, resource sharing, preservation and service to the special users. The National Library of Canada also plays a role in reviewing and providing input to proposed federal legislation and policies such as copyright and cultural policy.

The role of the Library of Congress and the American policies in developing LIS in the US and in other parts of the world is well known. The Library of Congress has been a trendsetter in developing new systems in library activities for national and international cooperation. The US today has a networked National Library scenario based on standards and policies which help initiate similar systems in other countries. The Library of Congress as the National Library plays the most vital role in developing a

well-coordinated National Library system and in setting standards for library development in other countries. The US Information policy through its important Acts not only emphasises the unique characteristics of information that distinguishes it from other types of resources but also addresses a number of issues illustrating the importance of information policy and its role in national and local levels in society as well as to individuals. The Freedom of Information Act, the Privacy Act, Copyright Law, etc deal with major issues in the Information sector.

Nearer home there are important developments in many Asian countries. The National Library of Singapore which has been directly responsible for both the National Library and public library functions, is now being developed to meet the needs of the people of Singapore with the help of the National Library Board (NLB), a national organisation with sufficient powers not only to manage, oversee and control different types of libraries but also to influence the overall library development in the country as a whole. The NLB Act has also expanded the legal deposit provision to include the deposit of non-print materials. This revision facilitates the development of a comprehensive and in depth collection of Singapore materials. The NLB can now develop not only a world class public library system but also a National Library which will be the most important centre for reference and research in Singapore. The NLB effectively influences the entire library system in Singapore and develops activities and services such as a network of borderless libraries, the national union catalogue and the access to the various collections of different libraries. The NLB is also required to develop a computer network of libraries in Singapore and is authorised to coordinate and facilitate access to library materials available in publicly funded libraries. The NLB requires all publicly funded libraries to participate in the inter-library loan scheme. The National Union Catalogue materials available in publicly funded libraries. The National Union Catalogue (NUC) complements the inter-library loan scheme because the user must get access to the material which he/she finds in the National Library of Canada. This provision will lead to a more systematic inter-library lending and cooperation.

The NLB also has powers to define, develop and implement the national collection policy. This will rationalise the development of library collections so that different libraries can have need-based acquisition for the ultimate development of Singapore's library system. The NLB is also given greater powers to ensure that personnel for libraries in Singapore are adequately trained and equipped with right and relevant skills. The NLB

also establishes standards for training programmes. The NLB is also empowered to establish Endowment Funds to fund or subsidise projects and research that determine the important directions of the library policies of Singapore. Recently the Lee Foundation has donated S\$60 million to the New National Library. The National Library will develop into a "regional centre of learning". The new National Library aims to be a one-stop information centre that will meet the needs of the general public to be informed, educated and entertained.

It is often said that Singapore being a small country has been able to achieve much more than many countries in LIS development. However, the initiatives and efforts of the People's Republic of China which is the largest and the most populated country in Asia is worth mentioning.

The National Library of China has almost one century of existence as its predecessor was established in 1909. Today it is the largest National Library in Asia and ranks fourth in the world. The National Library of China is a national repository of home publications, a national bibliographic centre, a national centre of library information networks and the library research and development centre. The library serves the central legislature, government departments, key research institutions, academic sector and education, business and the general public. The library is also responsible for implementing the official cultural agreements and conducts communication and cooperation with libraries at home and abroad. The National Library of China has been conducting projects based on international cooperation with the British Library, NIPPAN in Japan and the NLB of Singapore on different aspects of LIS development.

A major step towards setting up a coordinated National Library system in China is the Consortium of National Information Resource Sharing. The Consortium is a coordinator for the information resource sharing at the national, provincial and local levels. The National Library of China acts as a national convener and liaison office in the consortium. The provincial libraries function as convener liaison office in the respective provinces, autonomous regions and municipalities under the direct supervision of the State Council. City and district libraries have similar responsibilities. The responsibilities of the consortium includes:

- a. Establish a resource sharing system.
- b. Develop the union cataloguing on a regional basis.
- c. Jointly develop various kinds of resource databases.

- d. Standardise the inter-library loan service.
- e. Establish the national and regional information reference network.
- f. Use of Web resources with each other.
- g. Strengthen communication and conduct training.

It is understood that efforts are being made to strengthen the consortium for the purpose of incorporating gradually all networks into one single national network for the benefit of all libraries.

The South East Asian and African libraries have also made considerable strides in the development of LIS in the post-colonial era. The National Libraries and other libraries in these regions have taken the path of a need-based development so that the LIS can actually contribute to the holistic future development of the country and does not remain an elitist facility for the few.

4 Planning the National Library System for India

The Indian Library scene remains as diverse and unpredictable as the country itself. India is a conglomeration of different types of libraries which are not even loosely connected with each other. There are mainly four sectors in the library scene which can be seen to have a some systematic approach within these sectors with very little cooperation with the others.

- a. The National Library and other national level libraries, national subject libraries may comprise the National Library sector.
- b. The Academic library sector comprise the University, College, School libraries.
- c. The Public library sector encompasses public libraries at the National, State and local/rural levels.
- d. Special library sector includes not only research libraries but also the government and NGO libraries at all levels.

The administration and accountability of all these different types of libraries are also very diverse and there is hardly any communication between these separate funding and administrative agencies. Though most of the libraries in each sector are largely funded by different Ministries and Departments of the Government of India, proper linkages between these sectors have not been developed in India to make LIS into a decentralised but communicative system. Since all these sectors work in isolation the LIS are also at various stages of development.

The diversity of the Indian library scenario and to some extent the lack of administrative and professional will, have played vital roles in isolated development of different library sectors. But in today's context libraries can no longer serve the new generation by working in isolation. India has to take a more holistic approach to its LIS development. Therefore, Indian librarianship has to take proper steps to set up workable systems in different library sectors of which the NLS will be of prime importance.

The Indian LIS has grown in a decentralised manner so far and it is impossible to establish any centralised system at this stage of development. In some of the library sectors mentioned earlier there have been efforts to set up one institution as a central agency which is responsible for cooperation and coordination within the sector. The Information and Library Network (INFLIBNET) of the University Grants Commission (UGC) and Raja Ram Mohun Roy Library Foundation (RRRLF) of the Dept. of Cultural are such agencies in the Academic and Public library sectors respectively. The Council of Scientific and Industrial Research (CSIR), Indian Council of Agricultural Research (ICAR), Indian National Scientific Documentation Centre (INSDOC) and National Social Sciences Documentation Centre (NASSDOC) are all important agencies which act as cooperative bodies for LIS in the scientific fields and the social sciences. The national level subject libraries such as National Medical Library, National Science Library in the INSDOC, IARI (Acting as National Agricultural library) as well as the Asiatic Society, the Archival libraries like the Khuda Baksh Oriental Public Library (KBOPL), Rampur Raza Library and Sarasvati Mahal Library are all indispensable institutions in those specialised fields of LIS. The other three depository libraries under the DB Act-Connemara Public Library, Chennai, State Central Library, Mumbai, Delhi Public Library, Delhi are depositories of Indian language materials.

Like all other activities, automation of library functions and the creation of bibliographic database have also developed in isolation which has often given rise to uneven and ill-conceived growth of networks in different parts of India.

To create even a semblance of cooperation between these divergent agencies in all sectors, the National Library will have to set up linkages with the already created automated systems in a decentralised manner. All national level institutions must be brought together to decide on the possibility of cooperative support to set up a National Library System in the true sense. The new advancements in IT facilities will be the mainstay for setting up the NLS.

In spite of all these problematic diversities there have been several attempts to set up a workable LIS system in India. The father of Library Science Dr. S.R. Ranganathan envisioned a National Library System in the 1940s which will revive the Indian nation and make it take its justified place as a vigorous partner among the world of nations. The hub of his NLS was the National Central Library which he felt must have linkages with the other library sectors. He clearly states the following functions which should be performed by the National Central Library:

1. Copyright registry-Book deposit under the law.
2. Technical wing and cooperative cataloguing including Cataloguing in Publication (CIP).
3. Bibliographical services at the national level as well as to international organisations.
4. National Bureau of Inter-library Loan and National Union Catalogue.
5. Laboratory for Library Science and Bureau of International Exchange.

He also felt that the India Office Library in London should be shifted to the National Central Library of India to be the nucleus of that library

The post-independence period has seen the setting up of many advisory committees by the Government of India for development of Library and Information services. The most important and comprehensive report on the National Policy for Library and Information System (NAPLIS) was submitted by the D.P. Chattopadhyaya Committee in 1989. The committee recommended the following to set up a workable National Library System for India while taking into consideration the overall LIS scenario.

1. "To meet the library needs at the national level there should be a system of National Libraries consisting of the National Library, Kolkata Library of India, national subject libraries and such other libraries of national importance. These National Libraries should form part of one integrated system and the different parts form a coherent and functional whole. Each constituent of the NLS should be so planned and developed that it can assume a truly national character. The position of the National Library, Kolkata in a fully developed form of NLS shall be that of prime among equals".

- 2 The national depository libraries under the DB Act should supplement and complement the Indian National Library specially in collection and preservation of Indian published documents in different languages.
- 3 The Indian National bibliography should be made more comprehensive and up-to-date as a National Bibliographic service and a National Database of Manuscripts may be prepared.
- 4 Linkages should be developed among libraries, archives and museums to create an awareness for national preservation of India's cultural heritage.
- 5 The National Library should establish effective linkages with all other national level libraries through a National Library Board.

5 National Library of India as the 'Hub' of the National Library System of India

There have been many deliberations and recommendations on the role and functions of National Libraries. Among the core responsibilities are collection building of national literature; provide bibliographic services and access; collection of need-based foreign literature; serve as repository of all documents published in the country and preserve the same for posterity and serve as a link for international exchanges and inter-library loan. In the changing scenario of national and global information access, the National Library is also expected to play a major role as a 'hub' in the National Library system and provide leadership to the Nation's Library services. It has to therefore act as a coordination centre for cooperative activities at the national level. The nation must establish international professional linkages with other National Libraries and professional organisations. If a modern National Library is expected to perform on these lines let us examine what are the functions of the National Library of India.

The following functions recommended by the Reviewing Committee under the chairmanship of Mr. V .S. Jha are the basis of the present activities of the National Library.

1. Acquisition and conservation of all significant printed material produced in the country to the exclusion of ephemera.
2. Collection of printed material concerning the country wherever it is published and also acquisition of a photographic record of such material that is not available within the country.
3. Acquisition and conservation of manuscripts of national importance.

4. Planned acquisition of foreign material required by the country.
5. Rendering of bibliographical and documentation services of retrospective material, both general and specialised.
6. Acting as a referral centre purveying full and accurate knowledge of all sources of bibliographical information and participation in international bibliographical activities.
7. Provision of photocopying and reprographic services and
8. Acting as a centre for international book exchange and international loan.

Since most of these activities are part of routine functions, National Library of India performs all the core activities required of any National Library. One major aspect of India's National Library is that it is not directly responsible for compiling and publishing the Indian National Bibliography (INB). The Central Reference Library, a sister organisation situated in the campus prepares and publishes the INB on the basis of the publications received under the DB Act in the National Library.

As recommended in NAPLIS the National Library of India should be the prime library or the hub within the NLS. In such a scenario, the National Library of India has to effectively perform the following functions:

1. Provide leadership to the LIS in India.
2. Act as a coordinating centre for cooperative activities at the national level.
3. Establish linkages with other NLS and international professional organisations.
4. Create the National Bibliographic database with necessary linkages with major databases in other sectors in a decentralised manner.

The National Library is the depository and repository of all Indian published documents. It also acquires all publications on and about India published anywhere in the world. This makes the National Library of India as the library of last resort on the subject "India". The National Library collection being the richest and the largest in India specially in the fields of Arts, Humanities and the Social Sciences has to be the core input in the National Bibliographic Database.

Since the National Library collection has been enriched by the collections of the Calcutta Public Library of 1836, erstwhile Imperial Library and many rare personal collections of great scholars such as Sir Asutosh Mukhopadhyaya, Sir Jadunath Sarkar and the Buhar collection of important

manuscripts, the National Bibliographic Database of India can well be developed from this collection once it is fully converted into machine-readable format.

As mentioned earlier, library automation as well as database creation in Indian libraries have often been done in isolation without proper standardisation of bibliographic formats, as well as infrastructural development according to international standards. This may prove to be a major bottleneck in networking of libraries in different sectors to ultimately set up a workable National Library system. Therefore, it is suggested that the entire exercise may be done in phases, step by step. Since the Indian NLS has to be decentralised in nature, the concept of setting up consortia within the system itself may be workable and can be feasible in the present situation.

- I Keeping in mind the administrative and accountability factor and prioritisation of the National LIS, the first phase of the proposed NLS may be a consortium comprising the National Library, depository libraries under the DB Act and the Central Reference Library. All these libraries being under the administrative or financial control of the Dept. of Culture of the Government of India, for DB Act implementation, there may not be financial constraints once the Government of India accepts the need to set up such a consortium. Moreover, all these libraries are the depositories of the Indian language documents and are the centres of materials published in India. These libraries are in the process of automation and are preparing online databases in their respective libraries. The National Library and the Central Reference Library are developing databases of Indian language material in internationally accepted bibliographic formats which can surely be utilised by the other three recipients under the DB Act. Once these libraries are networked the INB can certainly be much more comprehensive and up-to-date with regional inputs. The National Library as the repository of documents published in India and those on India published abroad will truly be the 'hub' of information on the subject 'India'. 'Indiana' as a subject specialisation for research will be of great importance for scholars in India and abroad.
- II In the second phase of the NLS, all the libraries under the administrative control and jurisdiction of the Dept. of Culture,

Government of India can be brought together to set up a consortium. There already exists a loosely coordinated consortium of libraries under the Dept. of Culture in Delhi with the Central Secretariat Library as the centre of activities. This comprises the Central Secretariat Library, National Archives of India Library, Central Archaeological Library, National Museum Library and the National Gallery of Modern Art Library. All of them are closely knit and are building their collections and automating the library activities in consultation with each other to follow standard procedures and formats. The National Informatics Centre houses the infrastructural hub which is utilised by all. This exercise can become broad based, and the National Library of India can coordinate all these activities at the national level with all the libraries under the Dept. of Culture.

- III The third and very complicated venture will be to network the Public Library system under the aegis of the Raja Ram Mohun Roy Library Foundation (RRRLF). Since Public Library development is a state subject under the Indian Constitution, the attitudinal approach and financial position plays a major role in Public Library development in the Indian situation. The RRRLF being a Central Government (Dept. of Culture) funding/coordinating agency, has to undertake considerable responsibility to modernise all the State Central libraries at the first instance according to international standards as followed by the National Library of India to facilitate future coordination and networking within the National Library system. Since most of the State Central libraries are not yet modernised, the RRRLF and the National Library may be able to coordinate the process in a much more systematic manner.
- IV The most difficult phase will be to systematise and establish networking with the already developed sectors such as the academic library sector, the special/institutional library sector, the subject National Libraries and institutions of national importance in different parts of India. All these networks, libraries and institutions have developed according to their own requirements and convictions. To bring about standardisation of infrastructural development, procedures of automation and networking, bibliographic formats for database creation which are as diverse as the institutions themselves, will have to be a cooperative venture at the national level. Since remodelling entire libraries and

recataloguing the collections are not feasible both financially and professionally, by the National Library of India, only a decentralised approach through technological advances can be a viable method to ensure linkages with all these important institutions. Latest developments in the IT sector can help in achieving an interwoven NLS which will ensure access to multiple databases from different systems of LIS.

6 Conclusion

India needs a NLS which will fulfil the dreams of the father of Indian librarianship, Dr. S.R. Ranganathan and I quote: "The library should no longer be viewed either as a dormitory, or as a museum, or as a mere centre for relaxation; it should be developed as an agency for the perpetual self-education of one and all of the citizens, high or low, rich or poor, male or female, urban or rural; whatever his field of interest and whatever be his intelligent quotient; it should be multiplied in numbers and variety for this purpose. These should be woven into an organic National Library system and should be so developed as to help in making one and all of the citizens of the country develop their personality to their very best."

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Preserving the Cultural Heritage of India Through the Digital Mode by Decentralised National Library System

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The National Library, like other libraries in the country, practises computer applications, library automation, electronic databases, digitisation, etc. The scanning and archiving of rare and brittle books and other documents are undertaken, however, the output is not very impressive when compared with the massive collection of the library. The National Library's collection has grown so huge as a result of the operation of the D.B. Act, as more than 40 per cent of its total collection of books is sourced through this channel. However, many publishers are defaulting and thus the Indian National Bibliography must be made up-to-date and more widely disseminated to attract publishers to deposit their publications in the first place rather than as per the compulsions of the Act. In a country with such a vast area, huge population, linguistic, cultural and racial diversity, a monolithic structure may not yield the desired benefits. Thus a decentralised national library system is proposed with the National Library at the national level not as a centralised repository but as a national service and coordination unit, 5/6 Regional/Zonal National Libraries and 28 or more State National Libraries for the different states and union territories.

In this decentralised National Library System, the National Library at Kolkata must act as a referral centre coordinating bibliographical and full text information services with the aid of its collection and the help and collection of other National Libraries by involving them. There has to be a very functional and smooth resource sharing/ILL/document delivery system among the different National Libraries and even public libraries by employing traditional and nascent means so that any user from any part of the country will get a publication of interest in the least possible time. The primary advantage of this decentralisation is that the National Library is spared of many of the routine jobs leaving it to coordinate the collection, services and digitisation activities not just alone but involving and directing

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other libraries in the proposed National Library System and other educational and research institutions and voluntary organisations.

The digital information services by the national libraries of UK and US may give suitable pointers to examine and identify what is possible with digital technology in the Indian setup. Digital action plan for our National Library must include a Web OPAC, digital reference services even from print collection by selective scanning and electronic transfer as per user demand, digital conservation and preservation through decentralisation and parallel development, extension of DB Act to include electronic books and other information sources produced only in electronic form, sourcing electronic files of out of print books from the publishers, and virtual library of digital information produced and hosted in the country. Though there are advantages of a large amount of copyright owned contents and possibility of free dissemination without client authentication, there are threats of hackers, limitations of infrastructure, costly and continuously changing technology, standardisation issues in the dominance of proprietary hardware and software, correctness of OCR and its availability in Indian languages which needs to be addressed effectively to usher in digital preservation and dissemination of the country's cultural heritage.

1 Introduction

The National Library designated to collect, disseminate and preserve the printed material produced in the country and its cultural heritage, is the largest (and even the mightiest and holiest) library in the country. It was established with many lofty aims such as, acquisition and conservation of all significant printed material published in the country and on the country, acquisition and conservation of foreign material required by the country, rendering of bibliographical and documents services and acting as a referral centre purveying full and accurate knowledge [9]. It has an impeccable collection of over 22 lakhs (17,530 current periodicals) spread over a shelf space of more than 45 Kms., in buildings of about 2.5 lakhs sq. ft., and no doubt is one of the proud possessions of the country [12]. The Library is not a mute spectator to the technological advances as it has also tried like other libraries in the country to practise computer applications, library automation, electronic databases, digitisation, etc. as part of its efforts to interface information technology to usher in better collection development, functional information organisation, and finer information services. The Computer Division was established in 1988 to augment the modernisation activities with a Mini Computer- HP 3000 and MINISIS and switched over

to Client-Server Environment in 2001 with SUN E450 server and the campus LAN is being developed with 98 HP Pentium III PCs as nodes [4]. The scanning and archiving of rare and brittle books and other documents on compact disc are undertaken, especially earmarking a target to digitise English books and documents published before 1900 and Indian publications of pre-1920. However, due to various reasons, so far only 6,600 selected books (over 25 lakhs pages) in Indian and English languages have been scanned and stored on 548 CDs. These statistics are not very impressive when compared with the massive collection of the library and the computer enabling achieved by many of the research and higher education libraries in the country. An institution with its roots going back to more than a century, this is the right time to introspect its activities and consolidate on the benefits of technology and good practices elsewhere to prepare and execute an aggressive as well as pragmatic action plan for preserving the cultural heritage of the country more oriented towards electronic and digital modes. As far as the National Library is concerned, the Delivery of Books Act is very important and efforts must be made to streamline this Act in the changing perspective to guarantee the availability of out of print books on the one hand, and to include electronic books produced in the country.

2 Delivery of Books Act

The Delivery of Books (Public Libraries) Act, 1954: No. 27 of 1954, as amended by the Delivery of Books (Public Libraries) Amendment Act, 1956: No. 99 of 1956, defines a “book” as every volume, part or division of a volume and pamphlet, in any language, and every sheet of music, map, chart or plan separately printed or lithographed, but does not include a newspaper published in conformity with the provisions of Section 5 of the Press and Registration of Books Act, 1867 (XXV of 1867); and “public libraries” as the National Library at Calcutta (now Kolkata) and any three other libraries which may be specified by the Central Government in this behalf by notification in the Official Gazette. The Act directs the Publisher to deliver at his own expense a copy of the book (copy of the whole book with all maps and illustrations finished, coloured and produced as the best copies of the same) to the National Library at Calcutta and one such copy (on the paper on which the largest number of copies of the book is printed for sale) to each of the other three public libraries within thirty days from the date of its publication. The Act also calls for “the publisher of every newspaper to deliver at his own expense one copy of each issue of the newspaper as soon as it is published to each such public library as may be notified in this behalf by the Central Government in the Official Gazette.”

Normally reprints and unrevised editions are relaxed (though there is no discretion on the part of any publisher to decide what to be deposited) whereas Government Publications other than those “meant for official use only” are included. Any publisher who violates the Act shall be punishable with fine, which may extend to fifty rupees or the value of the book. By virtue of this Act, the National Library receives books and periodicals in almost all the Indian languages and English books published in the country [10].

The National Library’s collection has grown so huge as a result of the operation of the D.B. Act, as more than 40 per cent of its total collection of books is accounted through this channel. However, it is not correct to assume that the country published only 9 lakhs books in the last 50 years as many publishers are defaulting on this count and many titles are not reaching this august repository, as evident from the Director’s letter to Publishers about defaulters [10]. Apart from the legal obligation, the Director also talks about the advantage of giving widest possible publicity to their publications not only in this country but virtually all over the world also through the Indian National Bibliography. Thus the National Library must make the Indian National Bibliography (INB) as up-to-date as possible and disseminate it as further and fuller as feasible attracting the publishers to deposit their publications in the National Library as a better and stronger publicity option apart from the responsibility of preserving cultural heritage and the liability of the Act. This is evident from the fact that several publishers send their publications free of cost to newspapers like *The Hindu* to get a bibliographic list/review in their paper. To every copy deposited freely, the National Library (other public libraries) must explore to buy a copy also to lure in the defaulters. Stringent enforcement of the Act, the National Library may also be directly/indirectly involved with publisher registration, institutional member in publishers and trade associations, etc., would also help for better follow up and effective tracking of defaulters.

3 Decentralisation of National Library System

In a country like India with such a vast area; huge population, linguistic, cultural and racial diversity, a monolithic structure may not yield the desired benefits and centenary is the right time for an unbiased introspection for overcoming the hurdles and consolidating on the strengths. Just as we have many universities, IITs, IIMs, research and cultural institutions, there is need to have a decentralised national library system too with the National Library at the national level not as a centralised repository but as a national service and coordination unit, 5/6 Regional/Zonal National Libraries (in

each of the four metros, one for the north east and another for the less privileged smaller states in the north) and 28 or more State National Libraries for the different states and union territories, as illustrated in Fig 1. The union territories depending on their population may have a separate library or can be clubbed to the nearest state. In order to meet the aspirations of the people in different parts of the country, states and cities, and to serve them more closely, the State National Libraries for those states with a metro as capital may opt for another city in that state (for example, the Regional National Library of the East Zone may be at Bhubaneswar, Ranchi or Patna instead of Kolkata, the State National Library of Maharashtra may be at Pune or Nagpur instead of Mumbai, etc.). This can be done without much monetary involvement by converting the existing State Central Libraries to the State National Libraries by bringing them under direct Central Government control. The overall responsibility of collecting and archiving the regional language materials will be left with the individual State National Library and English publications from the state will be collected in two copies, one each for the State National Library and the Regional National Library. The responsibility of bringing out regional language bibliographies may be handed over to the State National Library and the responsibility of bringing out English publications may be done by the National Library by coordinating the task with the help of Regional National Libraries. As far as collection development is concerned, National Library will only acquire foreign publications on India and other foreign material required by the country. It should act as a referral centre by coordinating bibliographical and documents services for purveying full and accurate knowledge with the aid of its collection and the help and collection of Regional and State National Libraries by involving them. There has to be a very functional and smooth resource sharing/ILL/document delivery system by employing traditional (involving special couriers) and nascent (fax, electronic, etc.) tools and techniques so that any user from any part of the country will get a publication from one's State National Library itself.

If this arrangement could be extended to other members in the Public Library System like district, taluka, city, town and village level public libraries, it may also play a vital role to revamp the fund starved and collection scarce public library system. By decentralising the national library system, we are not lessening the national spirit but by creating a group of more manageable libraries, we are trying to refine and make it speedier the diverging roles and responsibilities of the national library system. If configuring a single repository may hamper the loss of cultural heritage in the case of accidents like fire and natural hazards, the regional libraries can

also archive language materials in that region and similarly the national library can archive English language materials from all parts of the country, so that two copies of the materials were available at different destinations. The primary advantage as a result of this decentralisation is that the National Library is spared many of the routine jobs about managing a huge collection leaving it time and resources for planning, developing, and launching digitisation activities at a high pitch not just alone but involving and directing other Libraries in the National Library System and other educational and research Institutions and voluntary organisations who are interested in digitising publications. The digital information services by the national libraries of UK and US may give suitable pointers to examine and identify what is possible with digital technology in the Indian setup. Since both these libraries have very functional OPAC and bibliographic information systems, the discussion gets largely restricted to their attempts at providing full text digital information resources.

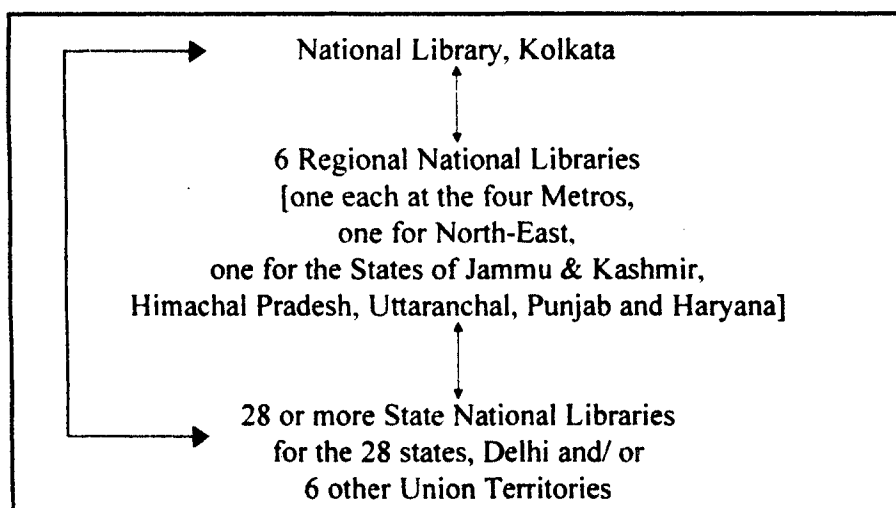


Fig 1: Proposed Decentralised National Library System

4 Digital Information Services from US Library of Congress <<http://www.loc.gov/library/libarch-digital.html>>

The Library of Congress National Digital Library Programme (NDLP), initiated in 1995, was one of the first large-scale efforts to disseminate high-quality educational and cultural content—digital versions of manuscripts, maps, films, photographs, sound recordings, and printed material—over the Internet [1]. Realising that “digital is rapidly becoming a principal medium to create, distribute and store content, and increasingly,

digital content embodies much of the nation's intellectual, social and cultural history", the National Library of US, Library of Congress is engaged in a series of activities related to providing full text information through its Website. Since the preservation of digital content has become a major challenge for society, in 1998 the Library of Congress began to develop a digital strategy. At the same time, the National Academy of Sciences (NAS) commissioned study report also recommended that the Library should work with other federal and nonfederal institutions and take the lead in a national, cooperative effort to archive and preserve digital information. In December 2000, \$100 million was given to the Library to lead a national digital-strategy effort called the National Digital Information Infrastructure and Preservation Program to provide a national focus on important policy, standards and technical components necessary to preserve digital content [2]. In early 2001 the Library established a National Digital Strategy Advisory Board of experts from the technology, publishing, Internet, library and intellectual-property communities as well as government to help guide it through the planning process. As the Library is the home of the U.S. Copyright Office, it is already engaged in issues relating to copyright in a digital environment.

The major digital initiatives of the Library are:

American Memory <<http://memory.loc.gov/>> is a gateway to rich primary source materials relating to the history and culture of the United States. The site offers more than 7.5 million digital items from more than 100 historical collections, mainly multimedia collections of digitised documents, photographs, recorded sound, moving pictures, and text. The American Memory pilot project was initiated in 1990 well before the World Wide Web, in which CD-ROMs were distributed to 44 schools and libraries across the country to assess interest in accessing important materials relating to American history from its collections.

Thomas <<http://thomas.loc.gov/>> contains US legislative information on Internet. Under the directive of the Congress to make Federal legislative information freely available to the Internet public, the Library of Congress brought the THOMAS World Wide Web system online in January 1995. Searching capabilities were built on the InQuery information retrieval system, developed by the Centre for Intelligent Information Retrieval, University of Massachusetts, Amherst. The first database made available was Bill Text, followed shortly by Congressional Record Text, Bill Summary and Status, Hot Bills, the Congressional Record Index, and the Constitution. Enhancements in the types of legislative data available, as well as in search and display capabilities, have been continuously added.

THOMAS currently offers the following databases: House Floor This Week, House Floor Now, Quick Search of Text of Bills, Bill Summary & Status, Bill Text, Public Laws by Law Number, House Roll Call Votes, Senate Roll Call Votes, Congressional Record Text, Congressional Record Index, Committee Reports, Committee Home Pages, House Committees, Senate Committees, etc.

Mapping the Internet Electronic Resources Virtual Archive (MINERVA) <<http://www.loc.gov/minerva/>> Web Preservation Project was established to initiate a broad programme to collect and preserve primary “born digital” source materials created in digital formats and does not exist in any physical form, including open access materials on the World Wide Web.

Country Studies <<http://lcweb2.loc.gov/frd/cs/>> contains the on-line versions of books published (between 1988 and 1998) in hard copy by the Federal Research Division of the Library under the Country Studies/Area Handbook Program sponsored by the U.S. Department of Army. At present, 101 countries and regions including India are covered. The contents cover a description and analysis of the historical setting and the social, economic, political, and national security systems and institutions of countries throughout the world and examine the interrelationships of those systems and how they are shaped by cultural factors. As the information provided is not copyrighted, this digital collection is available for free and unrestricted use.

Global Legal Information (GLIN) <<http://www.loc.gov/law/glin/>> collects digitised laws, regulations, and other complementary legal sources.

Apart from these, the Library also offers [3]:

- The Library’s 21 reading rooms provide access to unparalleled global information
- Selected items of international, cultural or historic importance from the Library’s collections
- International Exhibitions: Many exhibits on international themes are accessible through the Library’s Exhibitions Website
- Portals to the World: Electronic resources on the nations of the world selected by Library of Congress subject experts
- International Cybercasts: Videos of many public programmes on international issues are available through the Cyber LC Website

5 Digital Information Services from British Library
<<http://www.bl.uk/>>

The British Library, the National Library of UK, now holds the following digital materials [7]:

- Digital publications via Voluntary Deposit agreements, such as journals and interactive multimedia on CD-ROM
- Disks accompanying print publications
- Networked/online publications sent by email or ftp
- Special collections material such as manuscript collections containing E-mail, disks, tapes, etc.
- Digitisation and in-house projects producing images and structured products, for example 'Turning the Pages'
- Websites
- Audio
- Geographic information system data (GIS)
- "Initiatives for Access" programme demonstrated technology assisted access to information such as, digitisation of old manuscript, and the establishment of a digital storage, ordering, and transmission system for patents in electronic form.
- Turning the pages is an interactive display system so that visitors can virtually 'turn' the pages of rare books or manuscripts in a highly realistic way, using touch-screen technology and animation. They can zoom in on the high-quality digitised images and read or listen to notes explaining the significance of each page from four priceless manuscripts currently available online through web: Leonardo Notebook, Sultan Baybars' Qur'an, The Sherborne Missal, and The Lindisfarne Gospels [8].
- An electronic storage and retrieval system in 1999-2000 for access to more than nine hundred major science serial titles in the reading rooms and by document supply.

As far as future plans are concerned, the Library would [5]:

- Hold more electronic works.
- Develop a digitisation policy to facilitate access and preserve collection items.

- Establish a collaborative approach to the digitisation of heritage items in its collection.
- Specify the digital library infrastructure it needs and begin the procurement process
- Seek public sector funding for the hardware and software development required.
- Seek private sector alliances to maximise income from value-added service areas
- Assess the burden on publishers of an extension of legal deposit to digital and other non-print forms of publication, as the Library through Government tries for extending the existing legal deposit legislation beyond print to include digital and other non-print forms of publication [6].

6 Digital Action Plan for India's National Library

Library of Congress has also to shoulder the multiple roles of the National Library, Congress Library and Copyright Office. Similarly the British Library is also a very premier centre for science and technology information especially for Document delivery services. However our National Library has many other institutions and libraries to shoulder some of these roles leaving it to be more focused and streamlined in its vital task of preserving, maintaining and servicing information and publications concerning the nation's cultural heritage. Some of the activities that need to be taken on a high priority are as follows and as in Fig 2.

6.1 Web OPAC

Indications are that the library is seriously trying to create a database of its collection and make it available through a computerised information retrieval system. But seeing the massive and burgeoning collection and the existing output, the completion of this task may take more time unless some concrete action plans like the decentralisation mentioned above, creating better infrastructure and recruiting more computer proficient manpower, or subcontracting the work to private concerns, etc., are taken. The Library should place on its action plan as the highest priority to practise automating its housekeeping operations through a functional library automation system. It has to look for a good package that has demonstrated capacity to serve such a huge collection. And this package should support searching and selective retrieval of collection through a web enabled interface for permitting access to any person from any part of India (and even across the globe).

6.2 Digital Services from its Non-Digital Collection

A researcher from a distant place may be often interested in a reference from a book or few pages from an old journal and these can be sent to the person through a totally digital mode without investing much labour and money. The Library has to seriously revamp its reference wing with the minimum infrastructure required for such services (it seems this is already in place) and by identifying manpower with potential skills from its rolls and deploying them for this sort of services.

6.3 Digital Conservation and Preservation

The National Library has very strong facilities for traditional and conventional conservation and preservation facilities and it has separate divisions for physical, chemical (treatment and fumigation), reprographic (microfilming) and digital conservations [11]. However as the quantum of digitisation achieved so far (only 6600 books [11]) is very meagre compared to the collection, the Library has to gear up very seriously about making a visible impact on digital conservation and preservation activities.

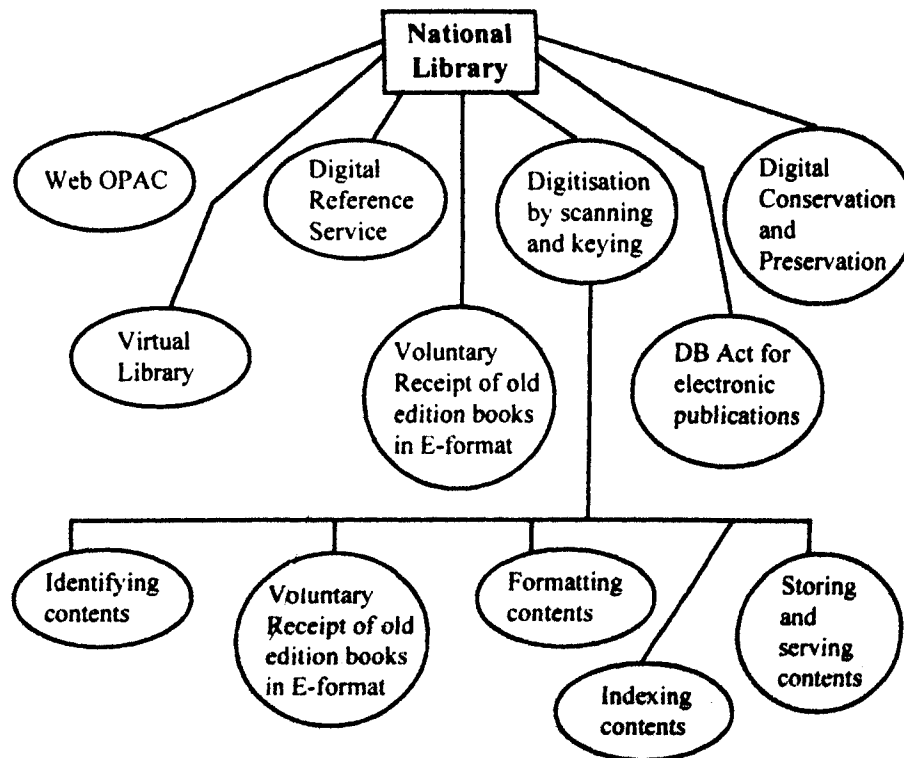


Fig 2: Digital Action Plan for National Library

6.4 Decentralisation and Parallel Development Effort

When the National Library alone can digitise 6600 books in a short span of time, the proposed network of National Libraries can achieve more through decentralisation and parallel development. Digitisation of our cultural heritage should be teamwork involving as many interested institutions and people as possible. There are many educational and research institutions, libraries, professionals, publishers and people at large who would be more than willing to offer their expertise, time, and money to act as participants in such a mammoth and onus task. As print to digital conversion through on-site keying and scanning takes more time, the Library must first explore alternate modes like DB Act for electronic books and publications and receipt of electronic book/files from publishers/authors.

6.5 DB Act for Electronic Publications

Like the BL's effort to extend the existing 'legal deposit' beyond print to include digital and other non-print forms of publication, the National Library may also try through Government to include electronic books and other information sources produced only in electronic form (electronic supplements of printed books are expected to be sent by the Publishers as per the existing Act itself). This should facilitate the National Library System to have more digital documents in its collection without spending time and resources for the complex operations of converting the printed sources digital. Moreover as electronic gadgets are widely being used in all spheres of human activity and the quantum of electronic publications is also increasing in the country, this will help to make our cultural heritage deposit system more exhaustive and functional.

6.6 Voluntary Receipt of Old Edition Books in E-format

Many of the books published in regional languages and even in English are published only once as either the publisher finds it worthwhile not to go for another edition as the first edition itself took so much time to sell or the author is not healthy or interested enough to update the contents to get it accepted by the same or another publisher. It remains to be seen whether the publisher or author has any apprehensions about offering a digital access to such out of print books, when such an initiative comes from a respectable institution like the National Library. When the small aberrations in following legal deposit will be bridged by more public relations exercises and mutually beneficial talks with the trade bodies, many of them will voluntarily offer their electronic files of such books (as Desktop Publishing (DTP) is very cost effective, even small publishers create an electronic version of the

book before going for its final printing) for serving by the National Library System. However, the Library has to procure/develop functional information retrieval systems (hardware as well as software) to host these contents. A mechanism must be created for publishers to send these files in multiple media and formats to the Library with a provision even for the publisher to upload the files to the Library's servers through login and password authentication.

6.7 Virtual Library

Attracted towards the virtues of electronic information, Internet and digital libraries, many institutions and libraries are making many of their publications accessible through their websites. The National Library may compile a list of such sites and create virtual library for enhancing the visibility of these sites and as a comprehensive source of digital information produced and hosted in the country. The Library may also motivate these institutions to convert and make available other in-house publications too.

7 Digitising Cultural Heritage

7.1 Identifying Contents

Since digitisation from the printed text involves equipment, manpower, consumables and other operational expenditure, a careful selection by experts in the field, opinion of frequent users, and expressed user demand is most essential before selecting a particular source for digitisation. However electronic surrogates of printed materials, and electronic only sources received directly from the publishers and other channels may be hosted depending on the applicability of the retrieval software and availability of hardware storage. Also the Library must honour the legal rights of publishers to encourage their business interests. Hence care must be taken to provide only full text information of those publications having either the copyrights expired, or those for which the publisher/author expressed their willingness for providing digital access by the National Library.

7.2 E-nabling (Capturing, Formatting, Storing, etc.) Contents

Late starters of technology have certain advantages especially for IT applications as technology gets more advanced at lower and affordable prices. We have to make certain administrative and technical decisions; administrative decisions such as whether the collections are stored centrally or distributed and the technical decisions such as what magnetic media and hardware platforms, refreshing or replacement of storage media, etc.

Conversion of printed information into digital form is widely attempted either through scanning or keying in data. In the case of largely textual library resources in printed form, a pragmatic approach is to scan full-text part and key in index and abstract for efficient selective retrieval. Storing electronic files in a particular format also needs decision - making since there are many formats to choose from (PDF for text and image pages, Word/html for text only, jpg, tiff, gif etc., for images, to name a few). Compression techniques may be used not only for saving space at the server side but also to effect fast transfer and client retrieval over limited bandwidth.

7.3 Indexing Contents

What aspects of the scanned/keyed in contents are to be indexed (author, subject, keywords, phrases, etc.), usage of stop words, vocabulary control, proximity searches, language and period limiting, exhaustive or sparse selection of potential keywords, etc.? The search engine dominated Internet indexing environment calls for machine indexing and formats like XML enable the whole text to be searchable leaving little to be decided manually about the index terms. However the primary drawbacks of this approach are lack of context in retrievals, attempting more recall, too many results for even a very specific search, too much noise in retrievals, etc.

7.4 Serving Contents

A database system must keep an inventory of the digitised collection especially because we expect to provide selective access to the data. Necessary front end to accept search queries and display matched results would be developed. We should also attempt for seamless access of metadata and contents over same or different servers permitting users to search the Library OPAC first and thereafter a smooth traverse to the different identified full text links.

7.5 Configuration for Digitisation

In the least guess, the Library must have a host of servers (with terabytes and terabytes of storage) with all the wares supporting digital information storage and serving using Internet tools. However as better technology will be available tomorrow at lower rates, the specifications are not very important at this stage. What is important is to start seriously scanning, keying, collecting and serving more and more of cultural heritage information in electronic form through web, discouraging proprietary tools to the utmost extent. We also need very functional scanners permitting continuous scanning of books of different sizes and condition, many PCs

connected to the LAN and server for data entry and uploading information to servers.

8 Constraints and Opportunities

8.1 Access Management

Managing secure access is not a problem in the context of national library as we are trying to provide non-profitable access from copyright free or copyright transferred items. However there is still the threat from hackers of defacing the Websites by either deleting the authentic files or replacing the contents with doubtful contents of propagandist nature. Hence the system personnel should be watchful in monitoring the contents served on a regular basis on the one hand and enforce strict technical controls such as firewalls and upload/modify/save restrictions on files stored. Enforcing foolproof access to servers of the National Library from unauthorised quarters through commonly employed technical restrictions such as IP validations of client, login and password verified access will be difficult as we are not aware of the profiles of clients. Precautions must also be taken from operational perils like virus and other server access problems.

8.2 Technology and Standardisation Issues

Like other technologies, computer technology has many ills apart from its projected virtues. How perfect is technology and how quickly is it transforming? Very new things (especially software) have a habit of not working properly for quite a while [13] and migration to new storage systems is expensive, apart from concerns about the loss of data or data transfer quality [16]. Even if the media are preserved intact, digital materials (susceptible to loss and destruction since stored on fragile magnetic and optical media that deteriorate rapidly and can fail suddenly from exposure to heat, humidity, or airborne contaminants) become unreadable if the devices to retrieve information from the media become obsolete or if the software that translates digital information to human-readable form is no longer available [14]. The electronic products are vulnerable to the same enemies that threaten paper, viz. natural threats such as light, moisture, and heat; organic threats such as rodents and insects; and chemical threats such as acid content, air pollution, and plastic, they face new problems like obsolescence, data degradation and the ease with which a document can be changed, either deliberately or by accident [15]. Unlike printed information that can be read anytime anywhere any posture when you had the original/ copy of the material, "access to hardware and software, access to telephone

connections, and knowledge of protocols can limit access to online information [18]. Since computers and allied technology are embedded in proprietary developments from many firms, it is always important to stress for interoperability and the need for standards and standardisation.

8.3 Optical Character Recognition

Optical character recognition is widely used to identify the characters in the document after scanning especially for full text search and retrieval. OCR conversion is not an exact science and considering an accuracy rate of 99.7 per cent (three characters in 1000 are wrong leaving every 67th word with a spelling mistake on average) when indexed leads to confusion and can be a monumental task to correct [13]. Another problem is the development of OCRs for Indian language materials and the solutions are still either at the nascent stage for some languages and not available for many.

8.4 Infrastructure

The significant human labor required for editing, inspecting, correcting, and metadata adding digital objects inhibit libraries from initiating large-scale digitisation efforts [17]. The actual costs of retrospective conversion will vary according to the condition, formats, content, and volume of the original collections; the choice of scanning technologies; scanning in-house versus contracting; the level of metadata needed to provide basic access; and the range of searching/processing functions to be supported [19]. Funds are always on the decline or being kept steady or enhanced only to counter the price increase and/or inflation. Since a large part of the library budget will be spend on staff with conventional skills and printed collection, there is very little left for creating required computer infrastructure and recruiting proficient manpower.

8.5 Sources

In the context of National Library and digitisation of cultural heritage, copyrights are not a major issue as many a time copyrights are either expired or the copyright owners are willing to ease their rights to such a virtuous task by an eminent institution like the National Library system.

9 Conclusion

The last fifty years of the National Library has been so exciting on many counts especially as it transformed itself from what is left by the empire to serve a buoyant and vibrant young democracy with a rich cultural,

ethnic and linguistic diversity. This is the right time to evaluate the collection, departments, programmes and services of the Library to make the collection more comprehensive and the services more up-to-date. It is urgently required for the library to conduct all its housekeeping operations through computer with a Web OPAC and online reading room with provision for fast document delivery and electronic browsing of few pages on request. The proposed decentralised system must liberate the National Library from doing the menial routines and concentrate on more serious activities related to preservation and dissemination of the country's cultural heritage and publishing output and give the well desired leadership to other libraries in the National Library system and the Public Library system. Digitisation on a massive scale is to be taken up for copyright free and copyright owned publications by sourcing electronic files from publishers, collaborative effort by other institutions and libraries, apart from local digitisation by the National Library either using its staff by giving the work to outside agencies. And the digital components must be so vast in the years to come so that the Library site must be able to gather few thousands of hits per day to reflect the transformation and its leadership in preserving and disseminating the cultural heritage of the country through digital mode.

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Retrospective Conversion in National Libraries: Some Issues and Implications

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This article attempts to discuss the importance of retrospective cataloguing in the perspective of national libraries. It describes the major objectives and process from scratch. It also includes the major recommendations, which needs the immediate attention of authorities for successful implementation and harvesting the exclusive reservoir of knowledge.

1 Introduction

National libraries are the depository as well as repository of all documents published in India. They are supposed to develop a comprehensive collection of published material written by Indians and concerning India written by foreign authors. They are usually copyright libraries meant to serve the nation as a whole. Today even national libraries are experiencing the tremendous paradigm shift from ownership to access of information; and from informing to involving the user. In this context, automation of libraries has become the topmost priority. Automation should be viewed as a means to increase efficiency, manage costs, improve library service and management or shortcomings of existing manual systems. It requires a tremendous amount of planning and work, including preparing the staff for the radical change in their work. Retrospective conversion is the process of turning of libraries and existing paper catalogue record into machine-readable form.

2 Objectives

The following are the objectives of retro-conversion:

- i. To make the enormous data and treasure of national libraries accessible to many as quickly as possible
- ii. To preserve and promote cultural heritage of national libraries.

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- iii. To make older as well as contemporary collections held by national libraries more widely known.
- iv. To make the collection accessible through library networks, without legal or contractual constraints on their use by other members of those networks
- v. To save space needed for other purposes
- vi. To make them centres of document delivery

3 Process

Pre-planning: Pre-planning is vital for automation. It enables to closely view the existing system and how it operates. It provides time to define the parameters of the automation, acquire the necessary technical and psychological background to meet the challenges, and devise an effective strategy for implementation. The steps for pre- planning are:

- i. **Assessing the Existing System:** It involves the physical examination of the collection to determine the number of unique titles, the number of the titles that can be weeded out and the percentage of erroneous titles that may require original cataloguing.
- ii. **Determining the Automation Budget:** It includes the extent of automation, the role of the library, the availability of existing hardware and software.
- iii. **Evaluation of the Staff:** It is to be determined how many people will be available, their level of computer and cataloguing of expertise, how much training will be necessary, and impact of conversion on everyday duties.
- iv. **Determining the User:** It will help in determining the choices of software, the necessity of search interface and design of the eventual database.
- v. **Drawing up the Desiderata Lists:** It refers to chart out all the advantages and disadvantages of the existing system and draw up desiderata lists for both short-term long-term objectives for the new online system.

4 Selection of Software

The following suggestions should be kept in mind before selecting any software:

- i. Outline expectations in software from the desiderata lists, summarises system capacity and response time requirements, the number of potential users, and the number of access terminals.

- ii. Separate the essential system features from the merely desirable ones in the desiderata lists and permit a realistic degree of flexibility, otherwise options will become too narrow.
- iii. Application software cost should be provided for both single-user and multi-user packages. Vendors should break down costs required for functional features and optional modules, adapters or features that are desired but not required. Delivery and installation cost should be clearly explained, as should training, programming and customer costs. Charges for delivery and installation should also be enumerated.
- iv. In addition to initial costs, ongoing expenses also have to be considered. These include hardware and software maintenance, additional equipment, transaction fees, and service contracts, staffing needs, supplies and conversion services. These fees should be separated and spelled out clearly.
- v. Determine product reliability and customers' support. Check the track record, the vendor's list of references and product reviews in journals.
- vi. Determine the ability to upgrade and enhance the system so that it can keep pace with technological change. This means that the system should be able to adequately meet the library's needs of additional terminals, storage and configurations are required.

5 Inventorying Collection

After choosing the software package, the real conversion process begins. The first step should be to conduct an inventory of the collection. This method allows the library to select for inputting only those titles that it deems relevant, thereby controlling the work flow prior to conversion. It also enables the library to get a good idea of the number of titles that will be required for special processing. The library must prepare worksheets for the properly recording information for transmittal to conversion services. These sheets should contain a standardised identifying code for each title, i.e. LCN, ISBN, or ISSN, brief bibliographical information, i.e. author, title, edition, location and photocopies of the title and verso page.

6 MARC Sources

After completing the inventory, the library conversion team should meet with the vendor/ consultant to access the result of inventory and select the source or sources to be used for obtaining MARC records. The criteria

for choosing one vendor over another include how the vendor database compares in size and subject to the library's holdings; the cost, turnaround, selection and pricing of add-ons, level of customer support; and the delivery format options. The procedure for transmitting inventory records to and from copy cataloguing service is generally quite easy. First the library chooses a service and supplies a profile of its specifications and requirements. Next, after reviewing the inventory sheets for the duplication or errors, the library selects those records that it wants to convert, and sends them to the service in either hard copy or disk format. Upon receipt, the service matches the record against its own MARC database. Then the records are downloaded to the disk or tape as specified, along with any add-ons and shipped to the library for editing and processing.

7 Converting the Record

If the library has chosen a pre-designed software package, there will be very little control over defining a database structure. If, on the other hand, the library has chosen a package that permits customisation, more planning and programming will be required. For programming, enlist the aid of the vendor, but be prepared for old-fashioned trial and error. In either case, the database should contain fields for standard bibliographic information. These should include a sequential i.d. number, a call number, title sub title, author and edition publication, subject and added entry, ISBN /ISSN/ LCCN, holding and location fields. These fields should be indexed, searchable, and sortable. Depending on the software, there will either be built in MARC interface or an optional MARC adapter available for capturing MARC fields and coordinating them with the field set up in a database structure. This is done by a mapping process. The main software vendor, the interface vendor, the copy catalogue service may all be able to provide assistance with the mapping process. Once the mapping process is in place, importing of records can begin. If the MARC records are received from the source of the floppy disks, they can be batch processed. It is a good idea to create an interim file to view and spot check the record before sending them directly to the catalogue.

8 Recommendations

The following are the recommendations proposed for national libraries:

- i. Government should encourage and stimulate the retrospective conversion of their catalogue through cooperation and by other means.

- ii. It should fund projects for retrospective catalogues of those collections, which make the greatest contribution to the country's own cultural, scientific, educational and information interests.
- iii. It should give consideration to those collections, which by virtue of their subject or language, facilitate the study of relations with other parts of the world.
- iv. It should enable the catalogue records to be consulted effectively and exchanged within and across national boundaries.
- v. It should maintain control over the national library system in order to preserve and promote its cultural heritage.
- vi. It should promote cooperation among national libraries, as broadly based as possible, and can significantly reduce costs of retrospective catalogue conversion.
- vii. It should try to reduce the cost of retrospective conversion with the help of existing and emerging computer and communication networks in order to allow as much as possible of bibliographic data already existing in machine-readable form in other catalogues and databases.

9 Conclusion

A public access catalogue is very often the goal of a retrospective conversion. The library should consider the following solutions to ease the transition to an operational public access catalogue:

- i. Devise a search system whereby the most casual user can have the capacity to search any word, whether it is contained in the title, author, or subject fields. This system should allow search involving combinations or alternative terms, i.e. search involving AND or OR connectors.
- ii. Post instruction in hard copy and online, with explanatory messages, operational and prompts, error detection, search assistance, and online tutorials.

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Standards and Guidelines for Digitisation and Digital Repositories in National Libraries

A. R. D. Prasad* and Aruna Areti**

This paper deals with the best practices for digitisation of various document media including paper and palm leaves, which include the decisions regarding the equipment such as scanners, storage devices and the software. The standards in setting up a digital library like the Dublin Core (DC), Open Archives Initiative-Protocol for Metadata Harvesting (OAI-PMH) and the Metadata Encoding and Transmission Standard (METS) are also discussed.

1 Digitisation

Though much of the recent publications are available in softcopy, it is a Herculean task to digit publications in print or palm leaves. India has a rich collection of ancient and medieval collection in palm leaves. Even in print medium there is rich literature in print form published in the 19th century. For example, a bibliography of European travelogues of India can be found in H. K. Kaul's work on *Travels in South Asia* (1).

The main objective of digitisation is preservation for posterity. Though it sounds the goal of ancient or medieval libraries, this objective becomes imperative and quite apparent in the case of publications of ancient and medieval centuries. Access, retrieval and dissemination are mainly the objective of setting up digital libraries. This paper deals with digitisation and building digital libraries. Scanning plays a major role in preservation of old documents.

1.1 Guidelines for Scanning

The "preservation mind-set" (2) of digitisation warrants many guidelines in scanning.

1. *Scan only once*: As much of the old documents need to be handled

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carefully, it should be kept in mind that these documents can not be handled many times and should be handled with utmost care. “Scan only once” attitude warrants many cautions to be taken while scanning documents.

- 2. *Scan at highest resolution:* It is a good precaution to scan at the highest resolution appropriate to the document. Scanning quality should be ensured, as old documents cannot be handled repeatedly.
- 3. *Use non-proprietary formats:* The image format should preferably in non-proprietary, if possible it is better to use open standards.
- 4. *Transformable image format:* The image format should be amenable to transformation to other formats (if required). Here open standards may allow such transformations, as the specifications of such formats are available to programmers to develop programs to migrate to other formats.
- 5. *Lasting storage media:* Storage media of scanned images should be long lasting like CD-ROMs and they should be preserved in better storage environments.
- 6. *Multiple copies of storage media:* It is a better idea to make a copy of the storage media and use the copies for regular use and preserve the original CDs for occasional copying.

1.2 In-house vs. Outsourcing

If scanning work is outsourced, it is always better to demand two copies of the CDs. It should be noted that outsourcing requires extra precautions in making the original old documents to the third party. However, a careful study of the advantages and disadvantages of outsourcing and in-house digitisation should be undertaken.

Every organisation should carefully consider the pros and cons of outsourcing digitisation projects or conducting them in-house. The following are some points to consider for both strategies:

	In-house	Outsourcing
Handling	More control, as the staff of the library has experience in handling and familiarity with each document	Need to be carefully monitored, penalisation should be heavy to deter careless handling
Experience	Needs to be trained in digitisation. The staff becomes familiar with digitisation	Expected that experienced personnel will carry out the project

	In-house	Outsourcing
Fine Tuning, readjustment	Many processes can be fine tuned as the in-house staff gain more and more experience	If the initial specification at the time of MOU requires modification, MOU may have to be revised, at time at an extra cost
Hardware, Software and Staff	Requires initial capital of procuring hardware, software and employing extra staff After few years, the equipment may be outdated	The responsibility lies with the vendor. We do not have to worry about keeping the outdated machines after a few years
Cost	Cost may raise during the course of the project	Vendor will absorb the extra costs
Time	Difficult impose penalties	Penalties can be imposed for any delayed delivery

2 Digital Library Standards

No single library can boast of having all the publications of the world, hence library networking. No digital library can boast of all the publications, hence we have networked digital libraries. However, networking warrants many standards to be following by the partner libraries with regard to content, description of content, access and retrieval.

2.1 Metadata

The simplest definition of metadata is “structured data about data”. Metadata is descriptive information about an object or resource whether it is physical or electronic. While metadata itself is relatively new, the underlying concepts behind metadata have been in use for as long as collections of information have been organised. Library card catalogues represent a well-established type of metadata that has served as collection management and a resource discovery tool for decades.

2.2 Need for Digital Library Metadata Standards

1. Reinventing the wheel and private solutions will lead to expensive implementation, both time and cost wise.
2. Future obsolescence will lead to full retro-conversion involving cost
3. Interoperability will not be achieved and this will be a hindrance in networking the digital libraries.

4. Increased interoperability will allow aligning various models, and creating application profiles which will support the semantic Web
5. Federated search will not be possible
6. The non standard metadata will be tied up with the digital resource.

2.3 Dublin Core

The Dublin Core Metadata Initiative (DCMI) (13) is an organisation dedicated to fostering the widespread adoption of interoperable metadata standards and promoting the development of specialised metadata vocabularies for describing resources to enable more intelligent resource discovery systems.

The first Dublin Core Series Workshop took place in Dublin, Ohio in 1995. Since that time, the DCMI has been committed to the continual refinement of a “core” foundation of property types and values to provide vertically specific (semantic) information about Web resources, much in the same way a library card catalogue provide indexes of book properties.

Dublin Core metadata is used to supplement existing methods for searching and indexing Web-based metadata, regardless of whether the corresponding resource is an electronic document or a “real” physical object. Dublin Core metadata provides card catalogue like definitions for defining the properties of objects for Web-based resource discovery systems.

Web pages are one of the most common types of resources to utilise the Dublin Core’s descriptions, usually within HTML’s meta tags, however increasingly there are many digital archives of physical objects that are beginning to make use of the Dublin Core in XML. Dublin Core metadata is often stored as name-value pairs within META tags.

2.3.1 Dublin Core Elements

The core elements of Dublin core are — Title, Creator, Subject, Description, Publisher, Contributor, Date, Type, Format, Identifier, Source, Language, Relation, Coverage, Rights. These 15 elements are described below

Element: Title

Name:	Title
Identifier:	Title
Definition:	A name given to the resource.
Comment:	Typically, a title will be a name by which the resource is formally known.

Element: Creator

Name: Creator
Identifier: Creator
Definition: An entity primarily responsible for making the content of the resource.
Comment: Examples of a Creator include a person, an organisation, or a service. Typically, the name of a Creator should be used to indicate the entity.

Element: Subject

Name: Subject and Keywords
Identifier: Subject
Definition: The topic of the content of the resource.
Comment: Typically, a Subject will be expressed as keywords, key phrases or classification codes that describe a topic of the resource. Recommended best practice is to select a value from a controlled vocabulary or formal classification scheme.

Element: Description

Name: Description
Identifier: Description
Definition: An account of the content of the resource.
Comment: Description may include but is not limited to: an abstract, table of contents, reference to a graphical representation of content or a free-text account of the content.

Element: Publisher

Name: Publisher
Identifier: Publisher
Definition: An entity responsible for making the resource available
Comment: Examples of a Publisher include a person, an organisation, or a service. Typically, the name of a Publisher should be used to indicate the entity.

Element: Contributor

Name: Contributor
Identifier: Contributor
Definition: An entity responsible for making contributions to the content of the resource.
Comment: Examples of a Contributor include a person, an organisation, or a service. Typically, the name of a Contributor should be used to indicate the entity.

Element: Date

Name: Date
Identifier: Date
Definition: A date associated with an event in the life cycle of the resource.
Comment: Typically, Date will be associated with the creation or availability of the resource. Recommended best practice for encoding the date value is defined in a profile of ISO 8601 [W3CDTF] and follows the YYYY-MM-DD format.

Element: Type

Name: Resource Type
Identifier: Type
Definition: The nature or genre of the content of the resource.
Comment: Type includes terms describing general categories, functions, genres, or aggregation levels for content. Recommended best practice is to select a value from a controlled vocabulary (for example, the working draft list of Dublin Core Types [DCT1]). To describe the physical or digital manifestation of the resource, use the FORMAT element.

Element: Format

Name: Format
Identifier: Format
Definition: The physical or digital manifestation of the resource.
Comment: Typically, Format may include the media-type or dimensions of the resource. Format may be used to determine the software, hardware or other equipment needed to display or operate the resource. Examples of dimensions include size and duration. Recommended best practice is to select a value from a controlled vocabulary (for example, the list of Internet Media Types [MIME] defining computer media formats).

Element: Identifier

Name: Resource Identifier
Identifier: Identifier
Definition: An unambiguous reference to the resource within a given context.

Comment: Recommended best practice is to identify the resource by means of a string or number conforming to a formal identification system. Example formal identification systems include the Uniform Resource Identifier (URI) (including the Uniform Resource Locator (URL)), the Digital Object Identifier (DOI) and the International Standard Book Number (ISBN).

Element: Source

Name: Source
Identifier: Source
Definition: A Reference to a resource from which the present resource is derived.
Comment: The present resource may be derived from the Source resource in whole or in part. Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Element: Language

Name: Language
Identifier: Language
Definition: A language of the intellectual content of the resource.
Comment: Recommended best practice for the values of the Language element is defined by RFC 1766 [RFC1766] which includes a two-letter Language Code (taken from the ISO 639 standard [ISO639]), followed optionally, by a two-letter Country Code (taken from the ISO 3166 standard [ISO3166]). For example, 'en' for English, 'fr' for French, or 'en-uk' for English used in the United Kingdom.

Element: Relation

Name: Relation
Identifier: Relation
Definition: A reference to a related resource.
Comment: Recommended best practice is to reference the resource by means of a string or number conforming to a formal identification system.

Element: Coverage

Name: Coverage
Identifier: Coverage
Definition: The extent or scope of the content of the resource.

Comment: Coverage will typically include spatial location (a place name or geographic coordinates), temporal period (a period label, date, or date range) or jurisdiction (such as a named administrative entity). Recommended best practice is to select a value from a controlled vocabulary (for example, the Thesaurus of Geographic Names [TGN]) and that, where appropriate, named places or time periods be used in preference to numeric identifiers such as sets of coordinates or date ranges.

Element: Rights

Name: Rights Management

Identifier: Rights

Definition: Information about rights held in and over the resource.

Comment: Typically, a Rights element will contain a rights management statement for the resource, or reference a service providing such information. Rights information often encompasses Intellectual Property Rights (IPR), Copyright, and various Property Rights. If the Rights element is absent, no assumptions can be made about the status of these and other rights with respect to the resource.

2.4 Metadata Encoding and Transmission Standard (METS)

METS is a newly emerged and 'the future standard' designed to encode all varieties of metadata necessary for the complete description of digital objects in a digital collection. Digital collections includes different kinds of objects such as books, journals, conference proceedings, reports, images, audio and video and even manuscripts. These digital objects can be composed of a collection of images in GIF, JPEG, TIFF or other format. Until recently there was no standardised method to encode metadata of all these objects at one place. Hence each digital library followed its own metadata practice. METS has addressed this issue and provides a common framework. In the traditional library environment MARC had provided the same solution to describe all kinds of library materials.

The Making of America II project (MOA2) has addressed the above issues and provided an encoding format MOA2 Document Type Definition (DTD) for descriptive, administrative and structural metadata for textual and image-based digital objects. Metadata Encoding & Transmission Standard (METS) is built upon MOA2 DTD.

METS is provided by Library of Congress Standards (LOC) Office (20) and Digital Library Federation (DLF). It is currently maintained in the Network Development and MARC Standards Office of the Library of Congress.

It is an XML based format for encoding metadata. METS helps in managing digital objects within a digital library and facilitates exchange of these objects between digital libraries. It is highly flexible and allows grouping of various types of metadata needed to ensure use and preservation of digital resources.

In a nut shell:

- METS is a standard for transmitting and or exchanging digital objects.
- It forms a standard basis for providing end users with the ability to view and navigate digital content and its associated metadata
- It is a standard for archiving digital objects.

METS is conceptualized as an application of the Open Archival Information System (OAIS) reference model. METS comprises of

- Transmission and/or exchange of digital objects to/from a digital repository (SIP)
- Archiving of digital objects for long-term preservation and access (AIP)
- Dissemination of digital objects via the Web to end users (DIP)

Features of METS

METS allows:

- to point to external descriptive metadata or for including metadata internally. It provides a way for linking this metadata to the digital content of the digital object.
- to link to external administrative metadata or for including metadata internally. It provides a way for linking this metadata to the digital content of the digital object.
- to specify the structure of a digital object, i.e. how the files and parts of files of a digital objects are linked.

- to provide a way for linking digital content with external software capable of disseminating that content, as well as an interface file that defines the specific disseminations and the required parameters for each through its behavior section

How METS Works

METS documents consist of 6 sections: (Details of Each Section [has been] are explained and presented in tabular form with examples [at] in Annexure 1)

1. Header Section
2. Descriptive Metadata Section
3. Administrative Metadata Section
4. File Inventory
5. Structural Map Section
6. Behavior section

Header Section: This is a mandatory section. This section records administrative metadata about the METS document itself - Author/agent and agent role, Alternate identifiers for METS document, Creation and update dates and times and Status. This does not deal with the digital document rather it deals with the METS document of a digital object.

Descriptive Metadata Section: The descriptive metadata is optional. A METS object can contain a Metadata Reference or a Metadata Wrapper (Metadata itself). A Metadata Reference is a link to external descriptive metadata. A Metadata Wrapper is for descriptive metadata that is internal to the METS object, as either Base64 encoded binary data or XML. METS does not its own scheme for description, so the implementer can choose the most appropriate descriptive scheme like Dublin core or MARCXML, etc.

Administrative Metadata Section: The administrative metadata is optional. It has four optional subcomponents for technical metadata, rights metadata, source metadata, and digipro (preservation) metadata. Like descriptive metadata it can contain a Metadata Reference or a Metadata Wrapper.

File Inventory: The file inventory includes all the files associated with a digital object. Files can be grouped; some groupings might include master files, thumbnails, etc. The files may be pointed to or can be contained internally as Base64 encoded binary data. This is also an optional section.

Structural Map Section: This is the hub of the METS package and mandatory. It gives description of the overall structure of the digital object (its structural metadata). This section describes the major components within the object, and how they relate to each other hierarchically. For example, if the object is a digitised book, this section will show that the book is divided into separate chapters, and if these chapters themselves contain sections or subsections, it will show how these are nested together. It can also represent logical structure, a physical structure, or some combination of the two. For example, one can divide a book in to chapters (logical) and a chapter into pages (physical).

Behaviour Section: Optional section. This section contains information on presentation of digital object to the end user. It provides pointers to computer programs or applications that are used to display digital objects such as page-turner or audio-players. Or it provides information on particular parameters to be used when rendering a file.

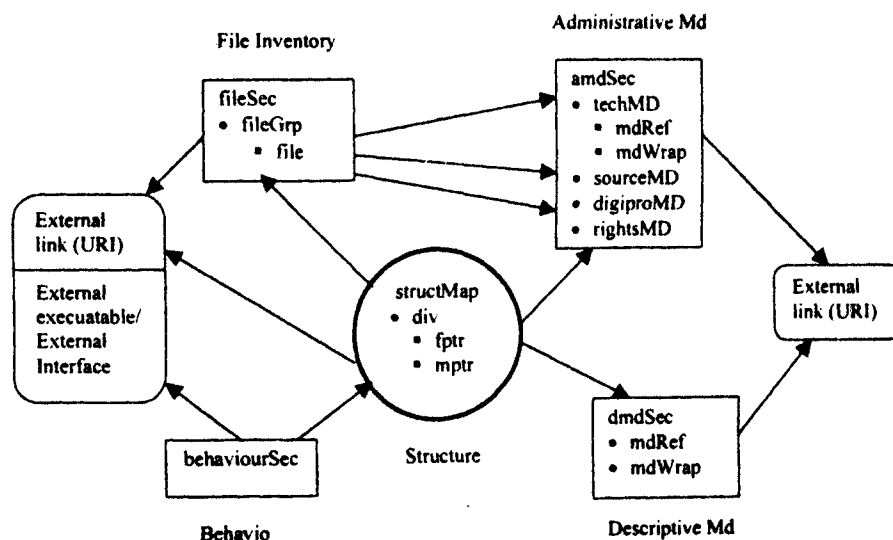


Fig. 1: Diagrammatic Schema of

Encoding

METS is written in XML. XML is a generic language for marking up electronic texts. XML is the most widely used metadata exchange standard available currently. The major advantages of XML are:

- Very robust
- Use of standard ASCII code as markup rather than a binary format to encode its data (making it human readable and readily interchangeable)
- Not limited to any proprietary software platform

All XML applications are defined in files known as Document Type Definitions (DTDs) till recently. DTD contained list of tags allowed within an XML application and rules dictating how to use them. Now a more powerful application called XML Schema is available. METS is uses XML Schema. It defines the tags and rules for an XML application in a separate XML document.

Enumerated Metadata for METS

METS is a very flexible schema. Those creating METS documents are free to use any metadata element sets. They are also free to define their own encoding practices with regards to recording information conforming to an existing metadata schema. The following types of enumerated metadata (in XML) can be used in the relevant sections of METS:

In Descriptive Metadata Section:

- Dublin Core
- MARC 21 XML Schema
- MODS (Metadata Object Description) XML Schema
- DCMI Simple DC (Dublin Core) XML Schema
- TEIHDR (Text Encoding Initiative Header)
- EAD (Encoded Archival Description)
- VRA (Visual Resources Association Core)
- DDI (Data Documentation Initiative)
- FGDC (Federal Geographic Data Committee)
- Others (flexible nature of METS will incorporate any future descriptive metadata)

In Administrative Metadata Section:

- MIX XML Schema: NISO Technical Metadata for Still Images
- TextMD: Schema for Technical Metadata for Text

However, flexibility in using any XML schema for metadata reduces the interoperability. If each institution creates METS documents with their own XML Schema for descriptive metadata, exchanging METS objects would be difficult task.

To promote greater interoperability of descriptive and administrative metadata within the METS framework while retaining the flexibility to adapt METS to local needs, the METS Editorial Board has endorsed the following XML schema for use with the METS schema:

- ♣ For encoding Simple Dublin Core metadata within a METS document:
 - The DCMI Simple DC XML Schema
(<http://www.dublincore.org/schemas/xmls/>)
<http://www.dublincore.org/schemas/xmls/simpledc20020312.xsd>
- ♣ For encoding MARC 21 metadata within a METS document:
 - MARCXML MARC 21 XML Schema Implementation
(<http://www.loc.gov/standards/marcxml/>)
<http://www.loc.gov/standards/marcxml/schema/MARC21slim.xsd>
- ♣ For encoding bibliographic data with natural language tags within a METS document:
 - MODS XML Schema Implementation
(<http://www.loc.gov/standards/mods/>)
<http://www.loc.gov/standards/mods/mods.xsd>
- ♣ For encoding NISO Technical Metadata for Still Images within a METS document:
 - NISO MIX XML Schema Implementation
(<http://www.loc.gov/standards/mix/>)
<http://www.loc.gov/standards/mix/mix.xsd>
- ♣ For encoding technical metadata for text documents within a METS document:
 - Schema for Technical Metadata for Text (TextMD) [created by Jerome McDonough, Elmer Bobst Library, New York University]
(<http://dlib.nyu.edu/METS/textmd.xsd>)

METS Tools and Software

Following few METS tools are available as open source:

- ♣ METS Java Toolkit: produced by the Harvard Digital Library Initiative Team. <http://hul.harvard.edu/mets/>
 - allows procedural processing of METS files in the context of an archiving project in which multiple content providers submit materials packaged in METS files to a centralised archive
 - a maximum level of automation is required for the creation of syntactically valid METS files on the provider side and for the ingest of those METS files on the archive side
 - the toolkit will be used as the basis for development of these automated systems
- ♣ XSLT stylesheet to convert MOA2 to METS produced by University of California, Berkeley. <http://sunsite.berkeley.edu/mets/moa2mets/>
- ♣ XSLT-based produced by NYU Digital Library team. <http://dlib.nyu.edu/metstools/>
 - METS2SMIL Viewer
 - METS Page-turners (with and without frames)
 - METS Page-turner with Search
 - METS text extension schema (Documentation for METS text extension) schema

Apart from the above tools, to implement METS in any Open Source software, [for] the following applications can be used:

- an XML editor (to create [the] METS documents)
- a Parser (to check the validity in conformance with the schema)
- an XSLT Processor (to convert the METS object for display)

2.5 OAI-PMH

The Open Archives Initiative-Protocol for Metadata Harvesting (21) has become the de facto standard for metadata harvesting. Thus service providers of digital libraries can collect metadata, index them and provide better search results. The section is meant for demonstration of OAI-PMH

verbs that may normally be used by service providers. The examples of OAI verbs display output in XML. Though they are not meant for the end-user, trying the following verbs give a better understanding of the harvesting protocol.

One can try some of the following OAI-PMH verbs to see the DSpace's output.

Identify: Returns general information about the archive and its policies (e.g. datestamp granularity)

Example: <http://drtc.isibang.ac.in/oai/?verb=Identify>

ListSets: Provide a listing of sets in which records may be organised (may be hierarchical, overlapping, or flat)

Example: <http://drtc.isibang.ac.in/oai/?verb=ListSets>

ListMetadataFormats: Lists metadata formats supported by the archive as well as their schema locations and namespaces

Example: <http://drtc.isibang.ac.in/oai/?verb=ListMetadataFormats>

ListIdentifiers : List headers for all items corresponding to the specified parameters

http://drtc.isibang.ac.in/oai/?verb=ListIdentifiers&metadataPrefix=oai_dc

GetRecord: Returns the metadata for a single item in the form of an OAI record

Example: http://drtc.isibang.ac.in/oai/?verb=GetRecord&identifier=hdl:1849/99&metadataPrefix=oai_dc

ListRecords: Retrieves metadata records for multiple items

Example: http://drtc.isibang.ac.in/oai/?verb=ListRecords&metadataPrefix=oai_dc&from=2002-12-01

ListIdentifiers: To get a list of identifiers

Example: http://drtc.isibang.ac.in/oai/?verb=ListIdentifiers&metadataPrefix=oai_dc&from=2002-12-01

Sample Output

Following is the output of the OAI-PMH verb given to the Librarians' Digital Library (LDL) (21).

http://drtc.isibang.ac.in/oai/?verb=GetRecord&identifier=hdl:1849/121&metadataPrefix=oai_dc

<?xml version="1.0" encoding="UTF-8" ?>

<OAI-PMH xmlns="http://www.openarchives.org/OAI/2.0/"

```

xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xsi:schemaLocation="http://www.openarchives.org/OAI/2.0/ http://
www.openarchives.org/OAI/2.0/OAI-PMH.xsd">
  <responseDate>2003-11-30T19:27:24Z</responseDate>
  <request verb="GetRecord" identifier="hdl:1849/121"
metadataPrefix="oai_dc">http://drtc.isibang.ac.in/oai/</request>
<GetRecord>
<record>
<header>
  <identifier>hdl:1849/121</identifier>
  <timestamp>2003-10-28T17:13:25Z</timestamp>
  <setSpec>2:3</setSpec>
</header>
<metadata>
<oai_dc:dc xmlns:oai_dc="http://www.openarchives.org/OAI/2.0/
oai_dc/" xmlns:dc="http://purl.org/dc/elements/1.1/" xmlns:xsi="http://
www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://
www.openarchives.org/OAI/2.0/oai_dc/ http://www.openarchives.org/
OAI/2.0/oai_dc.xsd">
  <dc:contributor>Prasad A.R.D.</dc:contributor>
  <dc:date>2003-10-25T19:21:39Z</dc:date>
  <dc:date>2003-10-25T19:21:39Z</dc:date>
  <dc:date>2002</dc:date>
  <dc:identifier>http://hdl.handle.net/1849/121</dc:identifier>
  <dc:description>The paper presents a Perl program for downloading
MARC21 records from a Z3950 compliant target in a batch mode.
Also discusses some of the open source software for Z39.50 protocol
required for running the Perl program.</dc:description>
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Mode</dc:title>
  <dc:type>Article</dc:type>
</oai_dc:dc>
</metadata>
</record>
</GetRecord>
</OAI-PMH>

```

If one wishes to test their digital libraries OAI-PMH compatibility, one way is to use

Open Archives Initiative - Repository Explorer, available at the site: <http://oai.dlib.vt.edu/cgi-bin/Explorer/2.0-1.45/testoai>. This performs various tests and reports the successes and errors on a given digital library.

3 Conclusion

As many digital library initiatives are taking world wide, it becomes absolutely essential to follow standards. The OAI-PMH is very important to harvest the metadata of various digital repositories, so that digital library service provider can offer search engines to digital library data providers. Though presently only the Fedora (22) software provides facility for implementation of METS, DSpace (23) is expected to provide METS in near future.

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Universal Bibliographic Control: Implications for India

K. S. Raghavan*

1 Introduction

The UNESCO / Library of Congress bibliographical survey of 1950 defined '*Bibliographic control*' as "the mastery over written and published records which is provided by and for the purposes of bibliography". In 1926, the Kenyon Committee (UK) report stated:

"Every library continues to catalogue its own books regardless of the fact that the same book undergoes similar treatment in some hundreds of libraries".

A study of the history of bibliographies over the past few centuries suggests that there have been several initiatives in the past aimed at preparing comprehensive universal bibliographies. The formation of the F.I.D. (started as the *Institut Internationale de Bibliographie*) by Paul Otlet and Henri La Fontaine was with the principal objective of preparing an exhaustive bibliography of books published in science and technology. The idea of universal bibliographic control acquired increased importance in the post world war period partly owing to the damage caused by the war to many libraries in Europe. This and the '*information explosion*' that followed the Second World War further intensified the criticality of the need for effective bibliographic control. The information scene in today's world is one of chaos. At the beginning of the new millennium and century we see stark contrasts in the situation obtaining in different countries and regions of the world. In the more '*developed countries*' and in countries that are on the threshold of entering this group, information dominates the lives of people and functioning of organisations including governments. The problem of controlling information is seen as a critical issue for the success of societies, countries and even individuals. At the other extreme, we have the poor countries where there is the chaos caused by the lack of information and information resources so badly needed for effective planning and to support

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efforts in the decision-making processes aimed at transforming these societies. In the context of many of these societies and regions the talk of universal bibliographic control and exchange of bibliographic data and records probably sounds hollow since there is very little to exchange! In some of the developing countries, the efforts aimed at filling the existing vacuum in bibliographic space have run into the risk of creating a highly confused situation leading to a different kind of chaos. This situation is only partly due to the entirely understandable policy adopted by many of these countries and their institutions not to solely depend on any one country or agency for techniques, technologies, tools and standards.

For example, many donor agencies still supply different equipment and consultants recommend different practices to developing countries. More importantly, however, much of this situation is the result of a lack of national leadership in this vital area and the result is disjointed, isolated and un-coordinated efforts. The bibliographic control situation in India today reflects such a situation. While the results and products of the several ongoing projects and efforts may not be entirely incompatible with one another, it is desirable at least now to adopt a strategy of using nationally and internationally accepted systems and practices. That this is not impossible to accomplish has been clearly established by the experience of the former Yugoslavia, which was a federation of five independent republics, two autonomous provinces, three official languages, two scripts and a national library in every state! All these did not prevent the library profession in Yugoslavia from agreeing on uniform cataloguing and classification practices and a single system for computerised cataloguing. This made possible the creation of the Federation-wide catalogue *YUBIB* with online inputs from each of the national centres (1). There are also other equally convincing examples at the international level to indicate what is feasible and attainable. The WIPO has convinced the patent offices in various countries and has ensured the acceptance and adoption of a series of standards governing the format, layout, codes for numbering patents, writing an abstract, a standard classification and indexing scheme, etc. More recently some of the open archives of E-prints have made the inclusion of Dublin Core metadata mandatory along with E-prints filed. It does therefore appear that there is indeed a very strong movement in the library and information field to promote standardisation.

2 UBC: The Concept and its Implications

The origins of IFLA's UBC can be traced to the International Meeting of Cataloguing Experts (IMCE) that took place in Copenhagen in 1969.

Some major outcomes of this meeting that underscore its significance are:

- Its recognition that national bibliographies should be the basis for achieving uniformity in cataloguing both at the national and international levels
- Its recognition that computerisation had made possible international exchange of bibliographic records
- Its recognition of the need for an institutional set up to carry forward the recommendations of IMCE

UBC was adopted as a major programme by IFLA in 1974. While the concept of UBC has undergone modifications, its basis lies in the firm belief that there is a need for a worldwide system for control and exchange of bibliographic information and that this is best achieved via creation and exchange of national bibliographies. The International MARC Programme (IMP) – jointly sponsored by IFLA and the Conference of Directors of National Libraries (CDNL) – resulted in the development of the UNIMARC format. In 1986 the IMP and the UBC were merged to form the IFLA UBCIM Programme with the objective:

“To promote the exchange and use of compatible bibliographic records among libraries in general and national bibliographic agencies in particular. Where national bibliographic data is in machine-readable form the Programme aims to create and maintain standards for data exchange”.

The concept of UBC met with a considerable amount of scepticism, especially in the library profession in Africa where solving problems of illiteracy and provision of access to scientific and technical information is of greater importance. However, the Asian library community has generally been convinced of the need to improve bibliographic control. The goal of UBC is the creation of an international system for the controlled exchange of bibliographic information and data. Thus the following objectives are crucial for the realisation of the goals of UBC.

- Creation of a National Bibliographic Agency (NBA) in every country
- Initiation of MARC programme by every NBA aimed at bibliographic control of publications of the country (national bibliographies in MARC format)
- Adoption and implementation of minimum bibliographic standards as also an internationally agreed upon exchange format for creation of MARC records by NBAs

- Creation of a suitable mechanism for the international exchange of MARC records between the NBAs

2.1 UBC embraces all forms of publications. Thus the successful functioning of NBAs depends on the creation of a legal framework in every country that ensures the receipt of and / or access to all publications issued in the country in any format. The prevailing laws in this regard in most countries, including India, are adequate in terms of ensuring receipts of printed books and serials. However, the existing laws are generally inadequate in terms of their coverage of the other kinds of print materials and also in terms of their coverage of audio-visual and other non-print materials. While in principle, UBC extends to parts of documents also (such as papers in periodicals, papers in conference publications, etc) these have generally been covered by indexing and abstracting services. It is important to ensure that such materials as these, except those that are classified and confidential in nature, are made available and accessible. However, there appear to be no mechanisms in place for many of the kinds of materials listed above.

- A large volume of print-on-paper literature appears in forms other than books and serials. For example:
 - Theses and dissertations submitted to institutions of higher learning
 - Technical and research reports resulting from projects sponsored by agencies funded and supported by public funds
 - Government publications
 - Conference publications
 - Reports of commissions / ad hoc bodies created by governments and government bodies

It is important to ensure that such materials as these, except those that are classified and confidential in nature, are bibliographically controlled, made available and accessible. However, there appear to be no mechanisms in place for many of the kinds of materials listed above. It is difficult to think of a more appropriate agency than the national library to house and provide access to such materials. This is not to suggest that the National Library, Kolkata (or the other libraries named in the Delivery of Books and Newspapers Act) should be charged with the responsibility of acquiring and making accessible these materials. What is suggested here is the need for and importance of developing mechanisms at the national level within

a larger framework of a national library/information system for the country and to ensure widening of the scope of the legal deposit law to include such materials. It is equally important to ensure the development of a mechanism for the acquisition and maintenance of required materials of foreign origin.

The existing legal deposit law needs to be strengthened to include such material. In the present system operational in India, mechanisms appear to be in place for ensuring availability of certain types of documentary resources. For example, patents and standards appear to have institutional mechanisms in the form of National Patent Information System and Bureau of Indian Standards that have assumed responsibilities respectively for such material. Appropriate institutional mechanisms need to be developed for other kinds of materials.

- A significant amount of materials appear in forms other than print-on-paper such as CDs, cassettes, etc. These need to be brought within the scope of legal deposit law.

3 Issues in Bibliographic Control in India

Having highlighted some of the aspects that need to be examined to widen the scope and coverage of national bibliographic control mechanisms in India, let us briefly examine some of the technical issues that need to be addressed to realise effective national bibliographic control and organisation. There cannot be two opinions on which agency should be responsible for implementing national bibliographic control mechanisms. The national library system is the most appropriate agency for this purpose. A conceptual framework of the institutional mechanism that could be considered has been suggested in another paper. In this paper the principal technical issues will be examined.

3.1 India presents many complex issues and problems. It is doubtful if solutions acceptable to everyone concerned could be worked out. What is important is to explore what is feasible under the prevailing conditions, and acceptable to most. It is best to begin by accepting the fact that given the present and emerging international scenario in the area, it is not only important but is inevitable to think in terms of machine-readable bibliographic databases. Print versions of catalogues and bibliographies, if any, should only be thought of as by-products. During the last four decades revolutionary changes have occurred in the mechanisms creation, transfer and exchange of bibliographic data. Given the nature of developments that we are witnessing today the future is likely to see greater exchange and

transfer of data – not just bibliographic data but even full text and full image data. The formats that are being used, and may be developed in future, for this purpose may even subsume bibliographic records as a subset.

3.2 Mechanisms for effective bibliographic organisation and control in the Indian context involve so many aspects that it is appropriate to enumerate the major issues that need to be examined. Even in terms of its publication output India is a big country. These publications appear in a number of different scripts and languages. At the highest level, therefore, we need to consider the issues related to the language and script of the bibliographic records for the publication output of India. Besides this there are issues related to appropriate standards and tools

3.3 Issues of Language and Script

The primary requirement in this regard is to clearly recognise the need for effective exchange of bibliographic information between communities that use different scripts and speak different languages while adequately and effectively meeting the requirements of the community that speaks the language of the item. It is to the credit of the library profession that it recognised this problem quite early in the development of bibliographies and tools for their creation. However, the problem assumed a different dimension with the advent and use of computers for bibliographic data management. Substantial progress has been made in respect of bibliographic control of materials that appear in English and in other European Languages (employing Roman script). This has been made possible because of the availability of technologies to effectively handle the Roman script.

The online availability of such large databases as OCLC database, the Web-based OPACs of all major research libraries of Europe, North America and Australia are all clear indicators of the level of development that has been achieved in the bibliographic organisation of materials in the Roman script. Of course these databases do contain records for materials in languages that employ non-Roman scripts including the major Indian languages. However, the practice for handling such materials that has generally been employed in many such tools is to transliterate to Roman script the various bibliographic data elements. Since its inception the *Indian National Bibliography* has also adopted this practice. Some of the large university libraries in India have tried to maintain separate card catalogues in the language and script of the items for materials in the regional languages. In recent years, several developments have taken place. To mention a few:

- The several bibliographic database projects that have been initiated
 - Conversion of the *National Bibliography of Indian Literature* / edited by B. S. Kesavan into machine-readable form
 - The project aimed at retro-conversion of the INB to machine-readable form
 - The national Bibliographic Database Projects of DELNET
 - The INFLIBNET's project aimed at retro-conversion of select large university library catalogues to machine-readable form
- The programmes that have been implemented in the National Library and Central Reference Library to develop bibliographic databases
- The ongoing efforts to update the *National Bibliography of Indian Literature*

In many of these programmes Romanisation as was the practice in the early years of such bibliographical tools as *Indian National Bibliography*, has not been resorted to. Instead bibliographic records are being created in the language and script of the item with built-in facilities to view / print records in the Roman script. Against this background, it should be possible for us to state some of the desirable features of a system for bibliographic control of materials in Indian languages are:

- The bibliographic records should preferably be in the language and script of the item
- The system should permit input and querying of the databases and sorting of records in the language and script of the items
- Given the situation obtaining in India the system should permit viewing / printing of records in any Indian or Roman script. While Romanisation is agreeably not the optimal solution for handling Indian languages and scripts, India being a multilingual country, it is important to retain the option of Romanising bibliographic records. During the last decade, technologies – hardware and software- capable of handling Indian scripts have become widely available and are being used for a variety of purposes. One of the technologies that was widely used during the 1990s is the GIST (Graphics and Intelligence-based Script Technology), which employs the extended ASCII codes for coding Indian language

characters (ISCII). In the years following the development of GIST technology, ISCII was being thought of as a solution to the problem of computer handling of Indian language scripts. But ISCII has limitations in bibliographic data handling and management (2, 5, 6). Many of the problems related to character sets in bibliographic control can be solved if a global standard character set such as the 16 bit UNICODE is adopted.

- The Unicode Standard is a character coding system designed to support the worldwide “interchange, processing, and display of the written texts of the various languages and technical disciplines of the modern world”. In addition, it also supports classical and historical texts of many written languages. It is intended to provide a unique number for every character, irrespective of the platform, program, or language. Before Unicode was developed, there were hundreds of different encoding systems. No single encoding could represent all the different characters of the languages of the world. Unicode is changing all that! Such industry leaders as Apple, HP, IBM, Microsoft, Oracle, SAP, Sun, Sybase, Unisys and many others have adopted Unicode. Unicode is required by modern standards such as XML, Java, ECMAScript (JavaScript), LDAP, CORBA 3.0, WML, etc., and is the official way to implement ISO/IEC 10646. Unicode enables a single software product or a single website to be targeted across multiple platforms, languages and countries without re-engineering. It allows data to be transported through many different systems without corruption. The extension of Unicode and promotion of its use is done by the Unicode Consortium, a non-profit organisation. Unicode is increasingly being accepted as a global standard. Unicode for Indian Languages uses ISCII-88, the latest official standard. The Department of Information Technology, Government of India is a full member of the Unicode Consortium with voting right. Draft Unicode for the following Indian languages and scripts have been developed
 - Vedic Sanskrit, Devanagari and Devanagari-based languages;
 - Bangla and Bangla-based languages, Gurmukhi, Gujarati, Kannada, Malayalam, Oriya, Tamil, Telugu
 - Arabic-Urdu, Sindhi, and Kashmeri

The issue of a standard character set continues to be the most important one, from the point of view of bibliographic control. The national

bibliographic agency and other organisations in the country must make a concerted effort to study the problems of documenting non-Roman, multilingual and multi-script materials and develop appropriate guidelines. A closely related issue is that of acceptable transliteration practices.

3.4 Issues of Bibliographic Record Format

Unlike in the more developed countries, our national library did not provide the requisite lead in all issues relating to standards for bibliographic control at the national level for other libraries to follow. In reality projects in machine-applications in cataloguing in the country originated in special libraries and this was followed by large academic libraries (e.g. IITs) implementing automation projects. These projects were largely built on homegrown software and in almost every case the computer unit/ division of the parent organisation developed the software with only a minimal input from library professionals. Not surprisingly the issues related to conformity with existing standards were not seriously considered in developing the programs. In the last 10-15 years the situation has radically altered. A large number of commercial library automation software have become available in India and a number of bibliographic database projects have been initiated / completed.

The issues related to bibliographic record format have been seriously debated and discussed in the country. The INFLIBNET that was among the first national level agencies to examine the issues opted for CCF with some modifications. The metropolitan city networks that emerged during the 1980s also considered these issues. In recent years several major MARC formats including CCF, UNIMARC and USMARC formats seem to have been considered in various bibliographic database projects. Libraries and bibliographic agencies that wish to cooperate and exchange bibliographic records cannot ignore the importance of format. It is important to recognise that national MARC formats (or those adopted as such) also act as medium for intra-national exchange of bibliographic data and facilitate the creation of large online union catalogues. The international library community appears to have confidence in the longevity of MARC. Although some writers predicted that ISO 2709 record structure is on the verge of elimination, such a thing has not happened (3). Given the massive investments in developing MARC-based bibliographic data management systems, it seems quite unlikely that ISO 2709- type tags will disappear in the near future. The advantages of having the national bibliographic agency, all the institutions engaged in major bibliographic databases projects and

large libraries agree on a single and uniform bibliographic record format – whether it be UNIMARC or US MARC – cannot be over emphasised.

3.5 Issues of Record Content and Catalogue Code

The content of a bibliographic record is determined by standards external to record format. The developments and achievements in this area at the global level have truly been remarkable and impressive. Efforts initiated by IFLA since 1969 (International Meeting of Cataloguing Experts, Copenhagen) have resulted in the development of international standards and their implementation by national bibliographic agencies. The statement in the form of FRBR (Functional Requirements of Bibliographic Records) and the publication of the revised version of the Anglo-American Cataloguing Rules (AACR – II) represent truly significant international developments in this regard. The AACR- II has indeed emerged as the de-facto standard catalogue code for libraries in the English language-speaking world. However, there are a large number of issues where significant national input from India is required if bibliographic control in India has to be effective. India's national library / national bibliographic agency needs to take up major projects for creating authority files in the following areas:

- Indic personal names
- Uniform titles for Indian classics
- Geographical names
- Corporate names
- Subject headings in Indian languages and also for Indic works

This is an area that has largely been neglected in all our schemes for creating an effective national bibliographic control system. We seem to have adequately large databases to be used as the basis for creating national authority files. As a concept authority control has been around for quite some time in bibliographic organisation and control. Essentially authority control is a process by which a single form of heading to be used in bibliographic tools is established for a piece of bibliographic data – names of persons, subjects, works, geographical areas, corporate bodies, etc. The international library community is agreed on the need for authority control as the primary means by which a comprehensive search for items having something in common can be carried out in bibliographic files. The creation of automated authority files for bibliographic data elements of the kinds referred to earlier are created in India would be an important step arriving at uniform practices across the country.

4 Conclusion

This paper has made an attempt to examine only the principal technical issues involved in creating an effective mechanism for bibliographic control of materials published in India. Of course there are several other issues that are important in this context such as suitable software, retrospective conversion of records, etc. Although the *Indian National Bibliography* is being brought out since 1956, there appears to be a wide gap and disparity between the status of bibliographic control in the developed countries and India. There is also a gap between what is desirable and reality. The inordinate delay in computerising the production of the *Indian National Bibliography* may be seen as one of the primary factors contributing to a lack of national level discussions and development of appropriate national standards. There have also been only a few major attempts at developing databases of materials in Indian languages. Consequently there has been yet no complete understanding of all the issues and problems in creating multi-script databases. India accounts for over 80 per cent of the total book production in South Asia. Nearly 75 per cent of these are in languages other than English. It is time that we develop a more comprehensive approach to bibliographic control at the national level. Fortunately, there have been several promising developments in recent years. The revival of the *Indian National Bibliography*, the creation of large online union catalogues by library networks such as DELNET, the INFLIBNET's ongoing programme of creating machine-readable database of holdings of select large research libraries are all pointers to the fact that various national agencies have realised the importance of developing an effective mechanism and tools required for bibliographic control at the national level. Going by the outputs of the various programmes and projects, even as of now nearly 1.5 million records should be available in machine-readable form. Perhaps what is lacking is an effort to coordinate the efforts of the various bodies so that the benefits accrue to the entire library and user communities. It is more important than ever before that adequate attention is given for sorting all the technical issues discussed earlier. The national library system should play the most crucial and important role in this. It should look ahead and think of what the environment is likely to be five years from now and above all provide the required lead in this vital area.

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Use of Advanced Information Technology: National Library of India

E. Rama Reddy*

1 Introduction

Librarians have adopted major technologies, as they were available to provide information to their users over centuries. Technological innovations include: clay tablets, parchment, palm leaves and paper. Although the book remained the main medium of storing information, computers started to take over the information storage functions of the present day libraries. CD-ROMs and DVDs in recent years are used for large archival storage medium and publishing medium for periodical literature. In the 1990s, the Internet and the World Wide Web introduced the online technology to a large number of users. The present day rapid changes in the network technologies and the availability of digital resources are challenging the very existence of the library as an institution. This is a challenge to the libraries and librarians.

As the libraries develop the networks, creation of digital content also assumes importance in providing improved services to the users. The senior staff members should address the policy issues related to digitisation and management of electronic content and services. Digitisation can be the order of the day, attractive to the institutions and funding bodies and increasingly important to the libraries. But it is important that the new technology is used to serve the users.

2 Communication and Information Technology

Many innovations are taking place in CITs influencing the working environment in every walk of life all over the world. These developments will change the environments associated with education, commerce, administration, political, social and cultural life of the people. The developments in the CITs provide many opportunities as well as challenges. All countries may not be able to take advantage of these advances because it requires enormous investments in creating the necessary infrastructures

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and the capabilities to modify these infrastructures with advances that take place. In addition, it requires a highly motivated human resource base to keep pace with the developments in technologies. Each developing country should establish a national CIT strategy. As the power of the computers increased, their networking offered unique opportunities for increasing the communication capabilities. The last few years have seen rapid changes in the networking of information technically and functionally.

The cyber space has opened up with extraordinary capabilities, which offer unusual advantages in accessing information. The public libraries stand to gain as much as the society at large. In the basic purpose of networking is to facilitate rapid, cost-effective and limitless communication. The present day world of digital information, it has become possible to communicate anything to anybody and anywhere. The transmission of huge volumes of data, graphics, sound, video and voice communication has become routine. The new communication technologies have increased the transmission to lightning speed. The optic fibre could revolutionise the bandwidth and it will further increase.

The advances in the CIT themselves have no meaning unless we have the capability to exploit them for the maximum advantage to the society. Reliable infrastructure no doubt is the base and an absolute necessity for us to plan our work. The advances in CITs enable us to create, store, and transmit the digital information over the network to everyone around the Globe. The digital distance is shrinking in proportion to the increasing speed of access. The benefits of sharing information can now reach millions of persons as against pre-digital age.

3 Communication and Information Technology and India

Though India has been producing extensive human resource capable of understanding the intricacies of Computer and Communication Technologies and their use, their abilities are mostly spent in fulfilling the requirements of other countries. In a global village, the communication process in information technology is of utmost importance, where bandwidth is the measure of the speed and capacity of communication process. The growth of CIT infrastructure is taking place at a rapid pace in most parts of India. Several thousand kilometres of Fibre optic backbones are established either by government agencies or public organisations or private investors. In a few years from now, several major states of India will have networks of high-speed fibre optic communications with enormous bandwidth capacity. The number of ISPs is increasing at an unprecedented rate. The

gateways for external communications are being developed in many parts of the country. Plans are on for connecting the remotest parts of the states to provide Internet facilities with the high bandwidth backbones. On the other hand, availability of computer systems is multiplying at a rapid rate and at an affordable cost.

4 Communication and Information Technology and Libraries

The library is an important institution to support the information needs of the users. Most of the libraries in India find the escalating cost of books and journals are cutting back into the library budgets. Network solutions, if used efficiently will compensate this hardship. Networking the library facilities in the public library should be the focus. These initiatives are basically for sharing the available library facilities among the concerned institutions. There are several handicaps to overcome in these initiatives. The first step is to create machine-readable bibliographic database in standard format for exchange. The second step is connectivity among the institutions for sharing the machine-readable data. The connectivity from local levels to around the globe does not automatically ensure availability. The ability to make discriminating choices is crucial for efficiency. Some resources will be in the public domain, freely available and some other resources will be protected and available for restricted use. Most of them will be affordable. Ultimately, our libraries need to be accustomed to make use of these resources. The librarians would require special skills, capabilities in managing the library resources intended for sharing. They should access, search, process, and organise information gathering from several sources focusing on the user groups

The network environment increased the capability among users to access digital resources and voice communication at a high speed. The role of the library in this changed environment should be to facilitate the communication among the users by compilation of available resources and also organising connectivity. The information on ongoing research in any discipline among institutions enhances the synergy and reduces the duplication of efforts. The libraries need to focus their efforts on accessing information resources rather than acquisition. Digital content of Indian information resources is what we need to concentrate on for effective sharing and also saving on the financial resources.

5 Building National Collection

The main objective of a National Library is that it should take responsibility of collecting, recording, providing access to and preserving

its own national imprint. The extension of publishing beyond print into a variety of media forms, including online publications, adds complexity to without changing the fundamental role and responsibilities of National Libraries. The transient nature of Internet publications, the huge volume of them and the difficulty of identifying what exists are challenges for national libraries. Collection building, description of resources, efficient resource discovery, technical infrastructure, permanent naming and preservation are areas that need focused attention and development. A number of national libraries have active programmes to find solutions to organise the new forms of information sources.

Any effort in this direction requires National I.T infrastructure. It can be defined as the vision of broadband communications that are interoperable as though they were a single network, easily accessible and widely distributed to all groups within society bringing business, education and government services directly to households and facilitation peer-to-peer communication throughout society. This vision is hard to achieve for countries with fewer economic resources. But it is necessary to build this infrastructure to be part of Global Information Infrastructure to share resources.

6 National Library of India

National Library is located in Kolkata and it has a long history. Calcutta Public Library established in the year 1836 was the public library in the eastern part of India. Imperial Library was formed in 1891 with a rich collection but restricted access to the superior officials of the government. These two libraries were merged and called Imperial Library and was opened for public use in the year 1903. After the Independence, Government of India during the year 1948 declared the Imperial library as National Library of India by an Act and during February 1953 the National Library was shifted to the present building and was opened to the public.

7 Objectives of the National Library

- Acquisition, conservation, dissemination of printed materials published in India
- Acquisition of materials pertaining to India published outside the country either in print or in any other form
- Acquisition of other materials needed by India
- Providing bibliographic and document delivery services of current and retrospective data
- Acting as referral service centre

8 Collection

National Library receives the books under Delivery of Books and Newspapers Act, 1954 apart from books purchased from other publishers. These are processed and organised to provide services to the library users (public). The language divisions established over the years acquires processes and provides services in 14 languages. Several books in the collection were published during the later part of 1700 and many in early 1800. These are rare and precious works in print, manuscripts and paintings. Conservation of the rare collection is the basic function of the National Library using all the modern conservation methods. Modernisation activities in the National Library started only during the year 2001. Around 6,600 books published before 1900 covering over 25 lakhs of pages are digitised and stored in CD format. Computerisation of National Library has started recently the process of retrospective conversion to create bibliographic database of its collection (25 lakhs of documents). It is advisable to create simultaneously the database of all new books that are received from January 2004. This is a massive task and the effect of it will be visible only when its database is available for access by public over the Net.

9 National Library Services

The services of the National Library include:

- Reading
- Lending
 - o Local Membership
 - o Outstation Membership
 - o Inter Library Loan
- Bibliographic Services
- Reprographic Services
- Service to Children
- Training and Guidance
 - o Conservation
 - o Preservation

National Library being the apex library in the country has the basic objective to provide services to the general public apart from other persons interested in their areas of interest. Services mentioned above cannot be rendered effectively, if measures are not taken to get all the books published in India under the Delivery of Books Act, 1954.

10 Laws governing the print media

1. Delivery of Books and Newspapers (public libraries) Act, 1954 requires publishers of every book and newspaper in India to deliver free of charge a specified number of copies of books and newspapers to certain specified public libraries
2. Press & Registration of Books Act, 1867 subjects owners of all printing presses, publishers and editors of newspapers compulsory registration with an appointed authority and requires them to make certain statutory declarations
3. Companies Act, 1956 provides for registration of a publication office as a company (Corporation).
4. Indian Copyright Act, 1957. To register copyright of works under different categories. Amended in 1994 taking into account of technological developments and enforced from May 1995. Further amended in 1999 and enforced since January 15, 2000.

In spite of the above laws enacted from time to time to streamline the print media in the country; many publishers, author publishers are violating the laws by not sending mandatory copies of publications under the Delivery of Books & Newspapers Act. This is adding to the problem of not having a comprehensive and reliable source for bibliographic control in India. It is estimated that there are more than 12,000 publishers publishing over 58,000 titles every year on an average in different languages.

11 National Library and IT Environment

Governments worldwide are responding to the challenges and opportunities presented by the developments in national and global networking. The move towards establishing national and global information infrastructure policies is reflected in number of significant government reports and other documents.

In the last few years there have been very rapid developments in online information and service provision through digital telecommunications networks such as the Internet. The Indian government is also responding to these changes by re-engineering and improving the delivery of information and transaction services. As the delivery of these services to business and the community occurs at all the levels, there is need to undertake these improvements in a collaborative way. It is necessary to establish a cross-jurisdictional framework for government electronic services which

minimises duplication of effort and which maximises the quality of services to the customers.

Once the government information has been made available in electronic form, one way of further improving visibility and accessibility is through the establishment of a single Web access point to all the Government Information – Local, State and National. The National Library of India could be the ideal place for single-point access to Government Information apart from other information services. For this the National Library has to change its present image, and build the necessary infrastructure with trained and skilled manpower to handle these important activities.

National Library should maintain pointers to the government sites. Support information needs relating to more than one jurisdiction. Allow members of the public to search for information and services across by designing appropriate search facilities. Allow people to know the complex Indian federal system to locate the information or services they require. Allow the users outside India to receive an oval picture of Indian government information and services.

For all these, the National Library will not have its own content except providing pointers to information held at other sites. The National Library could provide the following three services to its users:

- Browse Services
- Search Services
- Messaging Services

11.1 Browse Services

Allows people to access information by selecting the pointers from the lists which are grouped in an order like:– an alphabetical list of government agencies, a list of state or local government entry points and a list of new information arranged by date. The browse services can include the following

- About the Indian system of government
- Hierarchical view of the Indian government system
- Subject gateways

Agriculture

Business

Education
Environment
Health
Law
Tourism
What is new

11.2 Search Services

Search services allow people to access information by entering keywords, which can be matched by a search engine against indexes built by harvesting information resources. These indexes may cover all Websites or limited a single or group of sites. Current search engines rely on the text words from HTML pages of WWW sites. These search engines may not help to retrieve only Indian government information. To ensure retrieval of all relevant information it is necessary to develop a search capability or use of metadata for the indexing of government information.

11.3 Messaging Services

There are significant changes in the channels used for messaging services. General public, private and public sector employees, students and other groups are shifting towards the use of electronic mail as a more convenient channel of communication than traditional correspondence or telephone. The major issue here is not one of Website design but the arrangement of organisational support for dealing with messages and enquiries. Provision for real time online assistance is an emergency trend which will need to be monitored and considered by service agencies.

12 Conclusion

Libraries, especially national libraries, have an important role to play in this new environment. The traditional skills of librarians, including collecting, describing, indexing, preserving and providing access to sources of information are as relevant to the onle situation as they have been to print, microform, films, manuscripts, sound and other documentary formats. National Libraries, with their responsibilities for preservation of the national imprint, are in an ideal position to provide strong leadership in the coordination of efforts to ensure that the content of the information superhighway today is available to the researchers of tomorrow.

Bibliographic Resources in Indian Languages

K. K. Kochukoshy*

1 Introduction

The acquisition activities related to a library are known as collection development. This term was used in libraries where existing holdings on specific subject areas were considered before purchasing books as and when available. Emphasis was given in the whole process on trade catalogues, list of available books, bibliographies, books sent by publishers or sellers for inspection. Suggestions from users were also considered. The existing collections were evaluated, strengths and weaknesses of the holding were assessed and each new title was considered to ascertain whether a new title would strengthen the existing holding or not. Books are not purchased just for the merit of the individual titles, they are purchased recognising the needs and requirements of the present and potential users. The activities are not only acquiring books but also the development of the collection on specific subject areas so that users might get the right materials in the least possible time. But this may not be the same in respect of Depository Libraries. It has Legal Deposit Laws, which provides for the deposit of books under the law. Every library should have a collection development policy. It depends upon the user needs, its role as a national or international centre of excellence.

Collection development involves the following basic principles:

1. Depending on the needs of the respective library formulate a collection development policy
2. Chalk out a collection development programme
3. Evaluate the existing collection
4. Formulate the procedures and techniques of collection development
5. Allocation of fund for collection development
6. Assessment on the requirement of space in the library.

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Every library faces the problems of collection development for some reasons or other. It may be relating to funds and accommodation shortage, non-availability of right material in the market and lack of proper information on the available materials, etc. Depending on all these factors collection development policies of libraries differ. Methods of book selection and collection development procedure vary from institution to institution. The state of the existing collection and the needs and requirements of the clientele group's use pattern of the library collection are also very important. But here the scope of this paper is limited to deal with the problem of information sources on the material available in respect of Indian language publications. This is still a very vast area but I will limit myself to a bird's eye view of the bibliographic materials available in respect of major Indian languages. It is only an endeavour to introduce some of these major bibliographies in Indian languages without any critical intent.

2 Legal Deposit Libraries

In Legal Deposit Libraries as said earlier collection development is achieved through means of enacting Book Deposit Laws. In India there are two laws governing legal deposit of books. Here the Copyright Act is not considered since it is optional for the authors or publishers whether to register their publications for copyright or not. One is the Press and Registration of the Books Act 1867. Under this act a printer has to submit three copies of his publication to the three designated libraries of the state government. The other Act is the Delivery of Books Act, 1954 that requires the publisher to deposit four copies of his publication to four legal deposit libraries in the country, namely The National Library, Kolkata, The Connemara Public Library, Chennai, The Central Library, Mumbai, and the Delhi Public Library, Delhi. But the success of document collection under legal deposit depends upon the operation of these acts by the respective deposit libraries. At the same time there is problem of lack of infrastructure facilities like space, staff, funds, etc in all other libraries mentioned above other than the National Library, Kolkata. So collection becomes unutilised.

3 Major Bibliographies of Indian Literature

For Indian language resources in collection development some retrospective bibliographies are of great help. There are three major general bibliographies, which are of great use. The Catalogue of Presidencies of Madras, Bombay and Bengal are the earliest bibliographies in Indian languages. They are: *Catalogue of Native Publications in the Bombay Presidency up to December 31, 1864* by A. Grant (Bombay, 1965).

Classified Catalogue of Tamil Printed Books (Madras, 1865, 2nd ed. 1968) and *Catalogue of Sanscrit and Bengalee Publications* (Calcutta, 1865).

4 National Bibliography of Indian Literature

The Sahitya Akademi initiated action in the early 1950s to compile the now well-known *National Bibliography of Indian Literature*. It covers 60,000 entries in the fifteen languages of India and English on the basis of physical verification. The entries are made in roman script with in a classified order. It is in 4 volumes Vol. 1 contains information on Assamese, Bengali English and Gujarati, Vol. 2, Hindi, Kannada, Kashmiri and Malayalam, Vol. 3. Marathi, Oriya Punjabi, and Sanskrit, Vol4. Sindhi, Tamil, Telugu and Urdu. Later the 5th volume was published containing information on Nepali, Mithili, Manipuri, Konkani and Dogri languages. This is only a selective list. Before this attempt only Marathi languages had a comprehensive bibliography. But recent decades have witnessed massive efforts in some of the modern Indian languages to compile and publish retrospective bibliographies, after surveying and identifying the literary output of the past two centuries.

5 Indian National Bibliography

The I.N.B. has been conceived as an authoritative bibliographical record of current Indian publications in 14 major languages of India (Assamese, Bengali, English, Gujarati, Hindi, Kannada, Malayalam, Marathi, Oriya, Punjabi, Sanskrit, Tamil, Telugu and Urdu) received at the National Library, Kolkata under the provisions of the Delivery of Books Act (Public Libraries), 1954. Apart from these books from the languages such as Dogri, Konkani and Sindhi were also included as when they were received. Entries for books in all these languages are arranged according to classified sequence with an alphabetical index.

Since 1958 it is being published though there have been occasions when it failed to appear. But after the computerisation of compilation of the INB it has regularised its appearance. It may also be noted that the whole INB records since 1958 has been electronically created and it will be soon available on CD-ROMs and as hard copies as well. The monthly issues of INB will definitely serve as an excellent tool for document collection of current publications in Indian languages.

6 South Asian Bibliography

The Library of Congress under overseas acquisition programme established the American Libraries Book Procurement Centre (ALBPC)

which used to publish the list of books it procured under the name Accession List – India since 1962. The scope of the publication was extended to include acquisition from other South Asian Countries and the title has been changed to Accession List – South Asia from January 1981. It stopped publishing since 1996 and a private publisher Sage Publications India brought it out as South Asian Bibliography (1998). Though it is a very selective list but it is a good bibliographical tool in the Indian Language.

Assamese

Jatia Grantha suchi Assamiya Bibhag is the only available bibliography in the language which can be used for collection development. This is published by the Central Reference Library, Kolkata. The latest volume available is of 1970. The Indian National Bibliography, which is regular, will be of help in respect of current publications. Apart from that the Central Reference Library has published North East India- A Select Bibliography (2002) which is an excellent source material on the North East Languages.

Bengali

Like Marathi, Bengali does not have a comprehensive bibliography. The following are the major bibliographical resource works in the Bengali language. The catalogue of Bengali Printed Books on the Library of British Museum in 1886 compiled by J.F. Blumhardt and subsequent volumes are a good source of early printed books in the language. Later he has published the other catalogues of the library of the India Office Vol. 1 and Vol. 2.

The Author Catalogue of Printed Books in Bengali Language in 4 Vols. Published by the Imperial Library and the National Library in 1941 and 1963 is a very good bibliographical tool.

The Bengali language part of the Indian National Bibliography '*Jatiya Granthasuchi – Bangla*' published since 1958 is another important tool in collection development in respect of the Bengali language. There are two other important works to be mentioned here 1. *Bangal Granthapanji Kraya Labhya Granther talika* (Bengali Bibliography – a classification lists of Books available for purchase) published by the State Central Library in 1980 and the subsequent volume in 1982 titled *Nirbachita Pusta Talika*. 2. *Mudrita Bangla Granther Panji* for the period of 1943 – 1990 undertaken by the Paschim Banga Bangla Akademi. The fourth volume published in 1993, covered the period 1853-1867.

Hindi

Hindi is fairly rich in the sphere of bibliographies. A compilation titled *Hindi Granthasuchi Sarini* lists over one hundred and fifty catalogues,

exhibition lists and bibliographies in the language. We shall deal only with four major retrospective bibliographies. Krishnacharya (1917-77) made an able survey of early printed books in his *Hindi ke Adi Mudrit Granth*. Dividing the first seven decades of the nineteenth century, which witnessed the growth and spread of the art of printing in Indian languages, into three distinct phases which he calls Lallu Yug (1801-21), Missionary Yug (1822-44) and Sivaprasad Sitare Hind Yug (1845-70), Krishnacharya lists the early Hindi imprints chronologically. Apart from the learned introduction, which briefly chronicles the history of the printing press in India and in Hindi, grammars and dictionaries printed in English and other foreign languages.

The Nagari Pracharini Sabha of Varanasi published a select classified list in 1957 under the title *Hindi mein Ucchatar Sahitya*. It lists over 20,000 titles but does not attempt a physical description of the items listed. Brihat Hindi Granthasuchi (1965) compiled by Yaspal and Krishna Mahajan is another useful guide to Hindi Publications. An alphabetical catalogue consisting of an author-section and a title-section, it records over 24,000 books published up to 1964. The Mahajans issued a supplement in 1966 to cover the output in 1965 and 1966.

The most ambitious project aimed at a near total bibliographical coverage of books in Hindi was undertaken by the Viswesvarananda Institute of Hoshiarpur. The two-volume *Hindi Sahitya Sarini*, published under the imprint of the Insititute is more comprehensive than any of the previous volumes, as it records nearly 40,000 books published in the language from the earliest times to 1964, the year of its planning. The Sarini lists the books under twenty subject-groups and devotes the first volume to literary works. The second volume deals with books in other fields and contains the Index. The bibliography would have been more useful, if it had attempted a full physical description of the books it records.

1. Hindi men uchchattar sahitya (1957-58)/Mangal Singh and Rajabali Pandey. Nagri Pracharini Sabha.
2. Granthsuchi (1957-58 to 1963-64), Language Department, Government of Bihar, 1965.
3. Loksahitya ; Kaur sahitya sooch, Nalinvilochan Sharma, 1959
4. Hindi Granth suchi by Yaspal Mahajan and Krishna Mahajan. Bharatiya Grantha Niketan, 1965.
5. Hindi Natya Sahitya Granthaputi (1863-1956), by Krishnacharya, 1966

6. Uttar Pradesh men prakashit pustakon aur patrikaon ki soochi, by Government of Uttar Pradesh, 1968
7. Hindi Granth Kosha 1981-85, edited by Yaspal Mahajan. Bharaatiya Granth Niketan, 1987

Kannada

Kannada is very rich with bibliographical reference tools. The following are some of the excellent bibliographies produced in the Kannada language.

1. *Kannada Grantha Suchi* published by the University of Mysore is one of the best bibliographical tools in Indian languages. The publishers vouch to the fact that they have verified each title before entries are made. It has got annotations, author index, title index, index to publishers. The following are the details of the different volumes of Kannada Granthasuchi published.

Vol. 1. Pure Sciences. 1971

Vol. 2. Generalities, Useful Arts, Fine Arts, Linguistics, Mysticism, Religion and Philosophy, 1975

Vol. 3. Sahitya-Kavya. 1974.

Vol. 4. Gadya, Nataka, Sanna kathe and Prabandha, 1977.

Vol. 5. Fiction. 1979.

Vol. 6. Bala Sahitya (Children's literature), 1979.

Vol. 7. Anuvada Sahitya (Translation), 1984.

The volumes have also made an attempt to specify the location of the titles by naming the collections where they were available at the time of compilation.

2. Rashtriya Grantha Suchi, Kannada Vibhag

This bibliography is of the entries listed in the Indian National Bibliography. Since it is compiled in the Central Reference Library it has all the standards of a good bibliography. But this publication has brought to light only up to 1972 since its inception in 1958. Since the responsibility of printing and publishing the language bibliography rests with the state government there used to be some hitch always. Attempts are made to revive the rest of the volume.

3. *Grantha Suchi*. Published by the State Central Library, Bangalore. This bibliography is compiled since 1980 on the basis of books received under the PRB Act received at the State Central Library. It is published till 1990.

Konkani

Konkani books are being published in Marathi and in Kannada script. Some of the books published in this language are available from the bibliography compiled by K. V. Kenkare. The book titled *Gomantakiya Lekhakanchya Marathi Granthsuchi* Published by the Mumbai Marathi Shitya Sanga in 1970 is mainly on the books published by the Marathi authors from Gommantak or Goa. It contains an appendix on Konkani books.

Malayalam

Malayala Granthasuchi

Malayalam, is one of the few languages which has a fairly good control over its publications. The two main bibliographies in the language together records almost more than 90 per cent of the published output. In 1970, the Kerala Sahitya Akademi, initiated an ambitious plan to compile a retrospective bibliography under the title *Malayala Granthasuchi*. The *Granthasuchi* contains full bibliographical details of over 26,000 titles published between 1772, when the first book *Samkshepa Vedartham*, a compendium on Bible was printed in Rome, and 1970 when the compilation was decided on. The first volume (1973) deals with 15,623 literary works including translations from other languages and the second volume (1974) contains the details of functional and other literature under thirty broad classes, as also the author, title, series, subject indices common to the two volumes. Committed to continue the project, the Akademi brought out a further 5 volumes covering the period of 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995. The Malayala Granthasuchi volumes are one of the most comprehensive volumes in any Indian languages.

Desiya Granthasuchi Malayalam

The language fascicule of the Indian national Bibliography has been regularly being published since 1958 as annual volumes. It is one of the most technically organised bibliographies. There are three 10 year cumulations covering the period of 1958-1967, 1971-1980 and 1981-1990. These are used extensively throughout Kerala and one of the best available tools for document collection of Malayalam language publications.

The Catalogue of the Malayalam Books in the British Museum edited by Albertine Gaur is another important resource in respect of early imprint in Malayalam.

Marathi

Marathi is one of the developed languages of India and has produced thousands of books in different subjects. It also has the distinction of having published the first comprehensive retrospective bibliography in an Indian language. Shankar Ganesh Date (1905-64), an eminent bibliographer did the pioneering work of compilation and the publication of *Marathi Granthasuchi* as far back as in 1943. Date recorded 18,768 titles printed in Marathi between 1805 and 1937 in a classified bibliography whose subject-divisions are based on Dewey Decimal classification. He published a supplementary volume Part 2, which covers books up to 1950 in 1961 to list 7839 titles. Both the volumes contain full details of the items listed and have author-title-indices. Both these volumes are reprinted by the Rajya Marathi Vikas Sanstha in 2000. In this revised edition four appendices are also provided which includes early printed Marathi books from 1805 to 1855, an addendum, entries of 168 books which are not included in the earlier volumes.

The Rajya Marathi Vikas Samstha is in the process of publishing the later part of the Marathi *Grantha Suchi*.

Apart from this the following subject bibliographies are also useful resources in Marathi literature:

1. *Marathi Vidnyana wangmya suchi* (1951-1999), a descriptive bibliography of science books edited by Ra. Vi. Sovani. Mumbai; Rajya Marathi Vikas Sanstha, 2000.
2. *Marathi Vaidyak Granthaasuchi* (1951-1999)/ Edited by Suresh Nadkarni. Mumbai: Rajya Marathi Vikas Sanstha, 2000.

Oriya

There are very few bibliographical resource materials available in Oriya. The main work is the *Orissa Bibliography*, compiled by Hermann Kulke and others is one of the most comprehensive. Cuttack: Vidyapuri, 1981. The language part of the Indian National Bibliography *Jatiya Granthasuchi (Odia Bibhaga)* published since 1958 has published up to 1980.

Another source is the part from the Catalogue of the Library of India Office. London: India Office Library, 1905. compiled by J. F. Blumhardt. There is another work titled *Upanyas Granth Suchi* compiled by Manoranjan Pradhan and Sabita Pradhan. Cuttack : Agraduta, 1987.

Punjabi

Of the Indo-Aryan languages Punjabi is the only other language which can claim a fairly comprehensive record of the printed wealth. The survey of the Punjabi book world was undertaken by the Language Department at Patiala. Covering the period from the earliest times to 1968, *The Punjabi Bibliography* presents the essential details of over 12,000 titles in a tabular form. The Bibliography is in two volumes: the classified subject-wise catalogue known as *Punjabi Pustak Kosh*, and the alphabetical section under the title *Punjabi Prakashan di Suchi*. Both the volumes contain full bibliographical details. But the bibliography breaks the basic rule of cataloguing a book under its author. The bibliographies include *Punjabi Alochana Sahit Pustak Suchi* compiled by Hakam Singh and Amar Singh, *Bibliography of Punjabi Drama* by Joginder Singh Bajara and R. R. Gupta, *International Bibliography of Novels Published in Punjabi* by Manmohan Singh Arneja, *A Bibliography of Punjabi Language in Indian Antiquary* (1906) by George Abraham Grierson, etc

Sanskrit

Regarding printed publications in Sanskrit the main sources are the Indian National Bibliography of Indian Literature published by the Sahitya Akademi. The Central Reference Library, Kolkata has published the language edition of the INB as *Rastriya Grantha Suchi (Sanskrit Vibhag)*. It is available from 1958 – 1977 in 3 volumes. The Catalogue of the National Library, Kolkata is another important tool for collection development

Tamil

Tamil Nool Vivara Attavanai

In Tamil there are very few good comprehensive bibliographies. The collection now preserved in the Tamil Nadu Archives, in Madras, was used to compile the *Tamil Nool Vibara Attavanai* which is an important bibliography in the Tamil language. This bibliography records the Tamil literary output between 1867 and 1950, in a number of volumes, each volume being devoted to a certain period. The volumes have been split into a number of parts, each part being devoted to a group of subjects. Patterned on the

model of *The Indian National Bibliography* the *Attavanai* is a good classified catalogue providing full details of the books preserved in the Archives. Although it is a significant contribution to Tamil studies, the decision to use only the Archive collection has *ipso facto* reduced the coverage of the bibliography.

Intiya Teciya Nul Vivarappattiyal is the language fascicule of the Indian National Bibliography. It is being regularly published since 1958. It is a very good reference source in collection development.

Telugu

Telugu is one language where even after 250 years of publishing (about 2 lakh books) there is no comprehensive bibliography till date. But there have been attempts by different individuals to bring a modest control over its published wealth.

Telugulo Accehaina Toli Pustalalu, 1746 – 1856 compiled by J. Mangamma (Hyderabad, P. S. Telugu University, 2001) is one of the significant works in respect of earlier printed books in Telugu. K. Nageswara Rao's *Andhra Vangmaya Suchika* (1929) is another comprehensive bibliography of Telugu books covering up to 1927.

Grantha Suchika, 1863-1969 (Hyderabad Telugu Academy, 1972) compiled by Velaga Venkatappaiah is another important bibliographical tool. But it is only a selective list. The British Museum publication compiled by L.D. Barnett, *A Catalogue of Telugu Books in the Library of the British Museum* (London, 1912) also needs mention. *The Bharateeya Grantha Suchi (Telugu section)* has been published since 1958 to 1974 which is the list of Telugu books included in the Indian National Bibliography is also acts as an excellent tool.

The Catalogue of Telugu Books Available in the British Museum Library, London compiled by L. D. Barnet is another important reference tool in respect of early printed material in Telugu.

Urdu

Some of the learned institutions and societies for the promotions of Urdu language were instrumental in bringing out catalogues and bibliographies in the language thereby a certain amount of control was obtained. Sal-Din Quarashi had compiled the *Catalogue of Urdu Books in India Office Library, 1800-1920* (London, India Office Library and Record, 1982). Apart from the catalogues of different libraries like Khuda Bakhsh

Oriental Public Library, National Library, Kolkata Urdu Hall, Hyderabad, Rampur Raza Library the Urdu part of the Indian National Bibliography is a very good reference source. The Qaumi Kitabiyat Shoba-e- Urdu is regularly published since 1958 with the help of the Uttar Pradesh Government.

In short, this was a small attempt to survey the main resources available in Indian languages for the collection development. From this survey, it is evident that only half a dozen of the Indian languages have comprehensive guides to their printed wealth. In the case of the rest of the Indian languages we still have to depend on library catalogues, most of which are just checklists, trade-lists and book reviews. And there are languages, which do not even have good trade catalogues.

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Applications of New Information Technology in Libraries and Information Centres

Jagdish Arora*

Information technology refers to a mosaic of technologies, products and techniques combined to provide new electronic dimensions to information and retrieval activities. The term information technology represents convergence of three strands of technologies, namely computer, microelectronics and communications. It is used to describe products and services that arose with rapid changes in computer and communication technologies and their fusion. The libraries and information centres have always been quick to find applications of new information technologies in their libraries. Today's modern libraries perform most of their functions using software packages that are now available off-the-shelf. It has their catalogues available on the Internet with a Web-based search interface along with links to resources either acquired through external agencies or created in-house. Most of these libraries are on the Campus network with CD-ROM networks put-in place to serve the information requirement of their academic community. Several libraries have taken-up small-scale digitisation projects as part of their collection. The librarians and information professionals are required to develop skills that are required to use, develop and maintain IT-based services and products used by today's libraries. Rapid changes in information technologies and their adoption in libraries during the past three decades have drastically changed the functions and activities of information professionals in libraries. The article deals with new information technologies, their applications in libraries and their products and services. It describes Web-based library services that are modified versions of existing services and technology-driven new Web-based library services.

1 Introduction

The past three decades have witnessed unprecedented developments in computer and communication technology. Computers are being used

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increasingly to automate various activities in libraries with a suitable off-the-shelf general or specific-purpose software package that are now available in a wide range. Tremendous storage and processing potential of computers are being fully realised through existing communication and networking technologies. The two technologies are interdependent, inseparable and share a symbiotic relationship. The computer's ability to store and process vast amounts of information and communication technology with its ability to transmit this information from one location to another converged to form "information technology" or "informatics". The information technology refers to a mosaic of technologies, products and techniques combined to provide new electronic dimensions to information and retrieval activities. The term information technology represents convergence of three strands of technologies, namely computer, microelectronics and communications. Information technology is used to describe products and services that came up with rapid changes in computer and communication technologies and their fusion. Thus, technologies which improve the efficiency and effectiveness of an information system or service falls under the purview of information technologies. Some of these information technologies are available to the libraries for many years, while a few are now emerging as important tools for overcoming the barriers in the access and dissemination of information.

The emergence of Internet, particularly the World Wide Web (WWW) as a new media of information delivery, coupled with availability of powerful hardware, software and networking technology has further triggered large-scale commercial and non-commercial digitisation programmes the world over. Increasing number of publishers are using the Internet as a global way to offer their publications to the international community of scientists and technologists resulting in large-scale appearance of STM electronic journals on the Web. The Internet and Web technology provides an unparalleled media for delivery of information with greater speed and economy. Moreover, the Web-based electronic information products not only eliminates paper, physical storage and transportation costs, it also offers a hosts of other possibilities for incorporating multimedia and hyper-link features to electronic documents hitherto impossible on paper media. The Web-based electronic information products are exerting ever-increasing pressure on the traditional libraries, which, in turn, are committing larger portions of their budgetary allocation for either procuring or accessing Web-based online or full-text search services, CD-ROM products, online databases, multi-media products, etc. The libraries and information centres, as consumers of electronic journals and online databases, are benefiting

greatly from this technology-driven revolution. The information products of technological revolution, in turn, triggered major shifts in the traditional practices and policies of buying, storing and accessing journals.

Rapid changes in information technologies during the past three decades have drastically changed the functions and activities of information professionals in libraries. Most functions in modern libraries are being performed using software packages that are now available off-the-shelf. Several libraries have their catalogues available on the Internet with a Web-based search interface along with links to resources either acquired through external agencies or created in-house. Most libraries are on the Campus network with CD-ROM networks put in place to serve the information requirements of their academic community. Several libraries have taken-up small-scale digitisation projects as part of their collection. The librarians and information professionals are required to develop skills that are required to use, develop and maintain IT-based services and products used by today's libraries. The article deals with new information technologies, their applications in libraries and their products and services. It describes Web-based library services which are modified versions of existing services and technology-driven new Web-based library services.

2 Need and Purpose of Information Technology in Libraries

The application of Information Technology in libraries results in increased operational efficiency. The IT increases productivity of library staff. It relieves professional staff from mundane jobs that involves a lot of duplication so that they can be fruitfully used for user-oriented library services. It improves quality of services rendered by the library. Use of information technology ensures ease of functioning, accuracy and economy in human labour with greater speed. The exponential growth of information has made the manual system redundant giving way to computerised information storage and retrieval tools. Effective and efficient handling of huge quantum of information is only possible by using computers, which have the added advantage of being highly accurate and efficient that adds value to information.

Moreover, the technology also helps in rendering services that were hitherto not possible using traditional means. The new information technology facilitates improved management of physical and financial resources. The advances in technology and its availability at lower cost, has also raised expectations of users from librarians and libraries. The new information technology, on one hand, facilitates wider access to information for the library users, on the other hand, it facilitates wider dissemination of

information products and services generated by the library. The availability of networks facilitate resource-sharing and high-speed communication with other libraries.

3 Library Automation

The library automation refers to computerisation or mechanisation of all library activities. It deals with the design and development of processes and systems that minimise the necessity of human intervention in their operations. The library automation is defined as “integrated systems” that computerise an array of traditional library functions such as acquisition, cataloguing, circulation and serials control, etc. using an integrated library software. A computerised library and information system is a set of functional system encompassing:

- In-house operations of the library; and
- Other applications of the information technologies in libraries including information storage and retrieval.

An automated library is one where a computer system is used to manage one or several of the key functions of a library such as acquisitions, serials control, cataloguing, circulation and the public access catalogue. An integrated library system or an integrated online library system is used for computerisation of in-house activities of a library. Such application packages use a single bibliographic database and a set of interrelated application programs to support multiple library operations. Most integrated library packages are modular in design consisting of a number of optional and basic modules. Most library packages typically incorporates modules for: Acquisition, Cataloguing, Circulation Control, Serials Control and Public Access Catalogue. Online Public Access Catalogue is often a principal motive for the implementation of an integrated library package. Several off-the-shelf packages are available in the market that can be used for computerisation of in-house activities of the library. These software packages are available for single users in a workstation mode (Windows 95/98/2000) as well in simultaneous multi-user environment on Windows NT / Unix / Linux / Sun Solaris Operating Systems. LibSys, Alice for Windows, Slim +, VTLS, etc. are some of the important software packages available in India.

4 Automatic Identification and Data Collection Technology

4.1 Bar Code Technology

Bar code technology is being used in library and businesses for the past 30 years to minimise data entry errors, speed processes and reduce costs. Most

books, journals as well as other consumer products in the market carry black and white thin and thick strips. These black and white strips are known as barcode. Barcode technology offers a mechanism that can be used for identification, location and tracking of items that are bar coded.

Barcode is not a new technology, it was introduced in 1940 although it was first applied commercially in the 1960s as a method for tracking rail road cars. Since then, it has been used extensively in the consumer industry, material handling, industries and libraries. A bar code is a machine-readable code consisting of a series of bars and spaces printed in defined ratios. Bar code symbologies are essentially alphabets in which different widths of bars and spaces are combined to form characters and ultimately, forms a message. Because there are many ways to arrange these bars and spaces, numerous symbologies are possible. Common linear symbologies include UPC/EAN, Interleaved 2 of 5 (I of 5), Codabar, Code 39 and Code 128. While each symbology is in some way unique, the composition of a complete message (bar code) is regardless of the symbology used.

Barcode by itself, is not a system but is an identification tool that enables accurate reading of data for sophisticated management systems. Use of barcode increasing accuracy in data collection, saves time and brings about efficiency in library activities.

Bar code technology is being used in libraries all over the world especially for circulation of books as well as for several other functions. The Bar code technology has several other applications in the library including location control or book tracking, stock verification, receipt of issues of journals, cross checking of documents issued from the library, etc.

4.2 Radio Frequency Identification (RFID)

RFID (Radio Frequency Identification) is a term used for a radio-enabled device that communicates with or interrogates a tag or smart label, which is embedded with a single microchip processor and an antenna. The origin of the term lies in the invention of "tags" that reflects back or re-transmits a radio frequency signal. The two components of RFID are tags and readers. The tags or label is equipped with a single microchip processor, an antenna and an ID code that can be embedded in almost any object. RFID readers are radio-enabled devices, that communicate with or interrogate RFID tags or labels wirelessly and obtain the ID code on the tags from a distance of several inches. The RFID readers can be fixed or

made portable just like barcode scanners. RFID can also be referred as a high-tech version of the barcode.

In the past few years, the cost of RFID tags have come down drastically. Low cost RFID tags, typically costs less than Rs. 50 each for up to 1 metre range making the technology affordable as an alternative to the barcode, magnetic strip or printed label. RFID has advantages that include tolerance of mis-orientation and obscuration, lower cost over life and ability to “read”. Most importantly, RFID tags are cheap enough to be disposable and thin enough to go even inside the sheets of paper in some cases.

4.2.1 How it Works?

An RFID tag is a means of storing and retrieving data through a radio frequency transmission to the chip inside the tag. An RFID tag is simply an integrated circuit (chip), which includes memory for data storage and a substrate backing material with an antenna pattern. The chip can typically hold up to 1,024 bits (128 bytes) of information. In a typical library implementation, each book is equipped with smart labels and library patrons are given library cards imbedded with smart labels. Tags or smart labels can be programmed to store i) unique accession number of documents; ii) class number of a document; and iii) a unique security code for EAS.

While accession number is used for carrying out functions of circulation, stock verification and other library applications, class number can be deployed for sorting documents according to class numbers and segregating them into bins for different shelving areas. As mentioned earlier, the RFID tags can also be used as antitheft devices in libraries. Such applications of RFID are called Electronic Article Surveillance (EAS). New forms of RFID performs EAS functions as well, obviating the need for a separate device.

An interrogator, or reader, is a radio frequency device used to write data to and read data from the chip. Smart tags used in a library are passive, having no internal power source such as a battery. The interrogator provides enough RF energy to power and activate the tag to reflect or to present information stored on them.

RFID tags transmit data, antennas receive or transmit the RF signal through the air and readers decode the RF information received from the RFID tag through the antenna. The data is then transmitted to the host application for necessary processing.

In a typical library application, RFID readers can be installed at various strategic places to support different functions that RFID tags can perform. Some of the typical installations could be:

- Workstation designed specifically for library staff to facilitate the smooth handling of books and other material having RFID labels/tags.
- The security gates with Theft Detection System (AES). Any item that has not been checked-out either by staff station or self check-out station, will be detected as it goes past these pedestals.
- Self-service station with provision for checking out books independently by the borrower without any intervention of library staff. The theft detection system of the smart label for that book is deactivated to enable smooth passage from the security gate.
- “Drop Box” where returned books are placed through suitable slits by patron themselves. As books are returned through the Book Drop facility located suitably in a library, the smart labels are automatically read, and both patron record and Library database gets updated.

5 Office Automation and Computer-based Electronic Message System (CBEMS)

Libraries, besides using integrated library packages, also use office automation software like word processing (MS Word or Word Pro), spreadsheet (MS Excel or Lotus 123), database management systems (MS Access or Lotus Approach), presentation packages (MS Powerpoint or Lotus Freelance Graphics) and graphic applications (Photoshop or Paintshop). Librarians and information professionals, therefore, require basic training in use of such general-purpose packages.

Similarly, libraries also use computer-based electronic message system while attending their day-to-day routine work. A computer-based electronic message system (CBEMS) allows communication between computer users hooked into a network. A message or a unit of communication is sent by its originator to one or more recipients. CBEMS is used for communication between person-to-person, human-to-machine and machine-to-machine. A document or message sent through the electronic system may contain text, graphics, image, speech as well as other types of information.

All local, national and international communication networks offer CBEMS facilities. A computer-based system used for sending a message

or document may have facilities to create, edit, file, receive, transmit and print it electronically. Fig. 1 shows services categorised as Computer-based Electronic Message Systems:

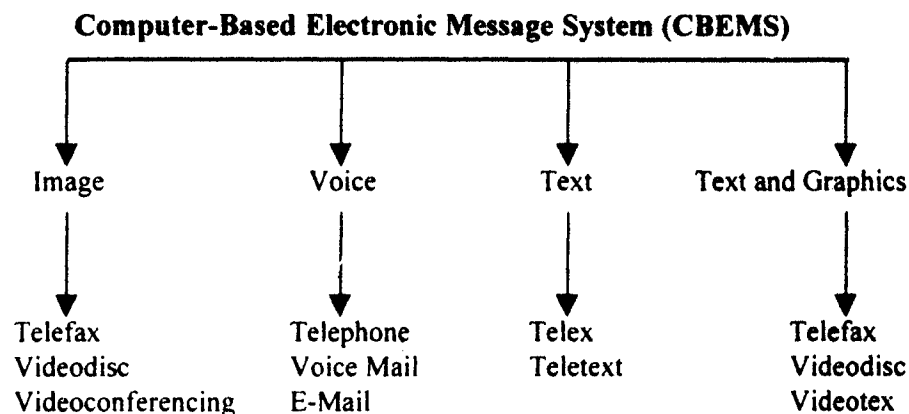


Fig. 1: Computer-Based Electronic Message System (CBEMS)

Computer-based electronic message handling offers many advantages over its conventional counterparts. The system improves the information flow process and does not require the presence of two communicating parties simultaneously. A group of persons working on the same project geographically dispersed over a large area can communicate with each other using CBEMS. Some of the important CBEMS modes of communication are given in Figure 1 above.

6 CD / DVD ROM and their Networking

CD-ROM technology uses hand-size, circular plastic platters made from polycarbonate with a shiny underlay that stores digital information optically. A typical disc used in a computer-based CD drive stores 650 MB using 333,000 sectors. All sections and sub-sections can be digitally labelled, located and read, but not altered by the user. CD-ROMs come with data already encoded onto them. The data is permanent and can be read any number of times, but cannot be modified. The CD-ROM drive's nominal speed is the same as its transfer rate. Single-speed drives have a 150 kbps transfer rate while the rate for 12x drives is 1.8 Mbps. 48x and 52x drives are now available in the market.

Writable CD-ROMs are now available as WORM (write-once, read-many). With a WORM disk drive, the disk can be read and reread but once it is recorded it cannot be changed. Data on erasable-Optical disks (EO) or

CD-re-writable disc can be erased and loaded, just like magnetic disks. An optical disk drive reads and writes data onto the disk using laser.

Digital Versatile Disk or DVD, initially stood for Digital Video Disc. Like a CD, DVD is an optical storage system for read-only, recordable and rewritable applications. But, being similar to a CD in many ways, DVD is considered as potential replacement for CDs.

The DVD format provides several configurations of data layers, moving from 2D storage to 3D storage. Each configuration is designed to provide additional storage capacity. The similarity between the DVD and the CD gets smaller with each upgraded configuration, DVD-5 utilises two layers to store the information and two laser beams to retrieve the data. Even higher storage capacity is achieved in DVD-9 by going 3D. The first layer is semi-reflective in DVDs, which allows the second beam to reach the second layer, which is fully reflective. Likewise in three-layered DVDs three laser beams are used to retrieve data, while the first two layers are semi-reflective, that allows third beam of laser to reach the third layer to retrieve the data. The disk is made by bonding together two 0.6 mm thick substrates using transparent (with no internal defects or bubbles) UV-cured (UV = ultra-violet) lacquer. This disk design allows almost twice as much data to be stored as DVD-5. Labels are printed on the other side of the disk conventionally.

The libraries are acquiring CD-ROM-based information products in increasingly larger numbers. Networking CD-ROMs is essential to facilitate simultaneous access to these CD-ROM products to multiple number of users. The benefits of networking CD-ROMs include easier management, installation, configuration and updates, and better security. They also offer cost savings in hardware and network software licenses and ultimately, higher user productivity and higher performance. The CD-ROM networking solutions available in the market includes i) plug and play mini-server; ii) dedicated CD-ROM servers; iii) Hard disc-based CD-ROM servers (thin client/ server technology; and iv) Silver Platter's Electronic Reference Library (ERL).

7 Multimedia Applications

Multimedia is a combination of some or all forms of knowledge representation such as text, data, images, photographs, animation, audio and video, that may have been converted from different physical formats into digital media and is delivered by computers. Unlike the analogue media

such as TV programmes, the digital media allows users to manipulate the data according to their requirements, use it at their pace, and interact with it at any point of time. When a multimedia program is developed in a hypertext environment, the resulting product is called hypermedia. Multimedia is, therefore, a part of hypermedia. All hypermedia products are multimedia products but not vice versa. The hypermedia, like Web, is non-linear in its presentation, it is Web-based where links for different media are embedded into a hypermedia presentation. The multimedia, on the other hand, is organised linearly. The main constituents of multimedia are as follows:

- i. Text: information about an object/ event, etc. notes, caption, subtitles, contents, indexes, dictionaries and help facilities.
- ii. Data: tables, charts, graphs, spreadsheets, statistics and raw data.
- iii. Graphics: both traditional and computer generated (vector form) such as drawings, prints, maps, etc.
- iv. Photographs and slides
- v. Animation: including both computer generated, video, etc.
- vi. Audio: including speech and music digitised from cassettes, tapes, CDs, etc.
- vii. Video (digital): either converted from analogue films or created using a computer.

A multimedia system records, processes, stores and delivers all types of information in binary code the same way as a computer does. This is quite different from the traditional analogue technology of radio, TV, audio-visual tapes, gramophone records, or the combination of digital audio and analogue video in interactive video discs. The main advantage of a digital format is the flexibility in combining, transmitting, manipulating and customising the elements of the multimedia according to the needs of the user.

Basically, a multimedia system is built around a PC with high-end graphic processors, a sound card (to play and record sound), CD drive and drivers for playing digital audio and video. Most systems these days are equipped with all the accessories listed above.

A wide range of application software required for developing multimedia and hyper media products are commercially available for all computer platforms. The most popular and inexpensive among them are

HyperCard on Mac and ToolBook on PC. On the other hand, there are a number of authoring packages for high-end multimedia design. The popular ones include Macromedia's Director, Macromedia's Authorware (both Mac and PC platforms) and Icon Author for PC. HyperCard is a popular Hypermedia toolkit for Mac that was used extensively in libraries for designing various applications during the post 1980s and early 1990s.

7.2 Multimedia Applications in Libraries

7.2.1 Multimedia Library Tour

The multimedia is best suited for creating interactive multimedia library tours. Such Web-based library tour programmes can have a presentation with graphics and sound in the background. The multimedia library tour virtually takes the viewer around the library, provides an effective orientation, guides them to collections, facilities and services, and presents a general layout and floor plans for the library.

7.2.2 Instructions/ Training

The multimedia tools can be effectively used for providing training on using library resources. The multimedia tools provide interactivity to make instructional programmes more presentable. The libraries are required to impart training on the use of Web-based and CD-ROM databases. Web-based multimedia instructional training guides are useful to handle such requirements with ease sparing the time of librarians for other jobs.

7.2.3 Multimedia Databases

Besides its collections in printed format, the library also possesses a sizeable number of photographs, artifacts, audio recordings and textural material in its collections. Multimedia can be used effectively to integrate such diverse collections to bring out a single compilation having photographs, sound recordings, scanned documents, etc. Such compilations can be brought out on CD-ROM which will serve for archival purpose as well as for day-to-day use.

7.2.4 Multimedia Catalogue System

Interactive multimedia catalogues are electronic forms of catalogues distributed in mail order catalogues market. The multimedia catalogues offer a high volume of information on a small disk. Several international publishing companies are also bringing out their catalogues in interactive multimedia CD-ROMs.

7.2.5 Multimedia Information Resources

Several references works earlier available in print format are available as multimedia electronic information resources. Several such products are mentioned under “electronic publishing”.

7.2.6 Multimedia Archival System

Multimedia archival system are mostly developed by the national museums, publishing houses and movie production companies. The museums bring out some of their star artifacts on multimedia CD-ROM for distribution.

7.2.7 Multimedia Use in Museum Libraries

Multimedia systems allow images, sound and text to be combined in imaginative new ways to be transmitted in digitised formats and be stored and reproduced or networked for wide public access. The use of multimedia in museum libraries helps them to promote and increase public interest in their collections and to exploit resources for the benefit of further enrichment. The students, teachers and researchers as well as general public are greatly benefited with such initiatives.

8 Electronic Publishing: Products and Services

The term “electronic publishing” signifies the use of computers in the production of printed publications as well as publishing of material in a computer-accessible medium, such as on a CD-ROM as well as making information available through online services. Electronically published materials are not simply electronic text, it often includes multimedia blends of sound and image with text. The products and services of electronic publishing undergo frequent changes, sometimes in real time, with feedback from their users.

Online Public Access Catalogues (OPAC) as well as online bibliographic databases can only be used to find bibliographic details without their contents in full-text. This limitation leads to the demand for electronic publishing as a tool to develop full-text databases in digital forms. However, the 1990s brought in a true revolution in the digital library system with the advent of World Wide Web (WWW). The WWW offered Web server at the server-end and web browser at the client-end for all prevalent platforms. Standard WWW clients such as Netscape Navigator and Internet Explorer eliminate the need of extensive support and user’s training. HTML, the de facto language of the Web, is an extremely simple yet powerful tool for

presentation of Web-based IT products. The Internet and associated technologies, made it possible for Web-based electronic information products to include multimedia objects such as text, image, audio and video. These technologies thus brought in the graphical components to electronic publishing which were earlier missing.

Electronic publishing on the Internet manifest themselves in numerous flavours and categories, although most of them emulate traditional publishing while others are revolutionary in their design and approach. While the present trend to imitate and emulate the traditional models of scholarly communication may continue for some time, eventually the capabilities added by the new media would be used in more innovative ways. The information resources currently available via the Internet includes electronic conferences (variably known as electronic forums, electronic user-group, listservs, discussion groups, etc.), courseware, tutorials, guides, manuals, electronic journals, patents, standards, electronic preprints and E-prints, technical reports, electronic theses and dissertations, online databases and databanks, electronic books and print-on-demand, dictionaries, encyclopaedia, portal sites or meta resources. Librarians and information professionals should have knowledge of not only the existence of such resources but also options and methods to make them accessible for their users. Some of the important Web-based electronic resources are briefly described here.

8.1 Online Databases and Online Search Services

The idea of sharing information has led to the concept of online databases. A database is a non-redundant, multi-usable, independent and physically available set of data elements, stored in an organised and structured manner to allow the user to search the information in an interactive mode. The first databases were bibliographic in nature and were online versions of existing indexing and abstracting services such as Biological Abstracts, Index Medicus, Chemical Abstracts, etc. By the year 1988, only half of all databases were bibliographic. With introduction of a number of online databases containing textual information, news, statistics, commodity prices, etc. a third type of databases holding text of full-length documents started appearing. Several full text of encyclopaedia, directories and articles from selected journals are now available online. The number of public-domain databases available for searching is growing every year. Thousands of databases are now available on compact discs (CD-ROM) as well as on the Web.

The concept of online searching was originally used to describe the process of directly interrogating computer systems to resolve particular requests for information. Now the term is used to denote searches that are conducted by means of a local computer that communicates with a remote computer system containing data files. The search process is interactive and the user can make changes in the search statement until a satisfactory result is obtained.

Online bibliographic services are responsible for mounting databases on a computer and making the necessary arrangements for such databases to be searchable from a large number of remote user workstations. Online search services that provide access to a large number of databases convert the databases into a uniform format with standardisation so that the basic commands and search techniques can work across all the databases that are offered by a given vendor. Library professionals need awareness of the range of search services that are available and commands to be used for conducting a search. Most of these databases are available from several search services. For example, database, INSPEC is available on DIALOG, STN, BLAISE and ESA-IRS.

8.2 Electronic Journals

Electronic journals or E-journals are used for those journals and newsletters that are prepared and distributed electronically. Electronic journals may be defined very broadly as any journal, magazine, E-zine, webzine, newsletter or type of electronic serial publication which is available over the Internet and can be accessed using different technologies such as WWW, Gopher, ftp, telnet, E-mail or listserv. Several traditional journals are now being published both on the Web and in print. Current issues or content lists for most of the journals are available on the Web or distributed to subscribers as an E-mail text messages.

Internet-based electronic journals started to appear at the beginning of 1990. These journals were mostly delivered as an attachment to E-mail while their back issues were mounted on anonymous ftp sites and, users were required to download them from these ftp sites. The libraries and information centres made them accessible through their gopher site. The year 1995 witnessed the peak of Gopher technology which then dropped suddenly and dramatically by 1997. With the advent of WWW technology in 1993, electronic publishing became more than a novelty, the Web as a means of delivery of electronic information has grown steadily since then. As publishers experiment with different publication modes and models,

the very definition of a journal is undergoing change in the electronic environment. New journals have evolved based on the graphical capabilities of the Internet that are available only in electronic form.

With the advent of CD-ROM technology as an optical storage media in the mid-80s, several electronic journals started appearing on CD-ROM. The first major development in this direction were projects experimenting with electronic equivalents of printed journals. One of the oldest examples is ADONIS where images of articles published in printed journals are distributed on CD-ROM. Still older examples are full-text online journals offered by the major host organisations. Online hosts like DIALOG and STN were not only offering online databases but also full-text online journals for the past several years, although as a simple ASCII or text files without graphics and pictures. In 1989, there were almost 1,700 full-text sources available through sixteen online systems. All of these projects involve journals and all of them are by definition electronic, but these journals were not truly electronic, they can at best be described as electronic versions of printed journals.

The number of electronic journals has grown in dramatic proportion from less than 10 in 1989 to more than 8,500 in April, 2000. The 37th edition of the Ulrich's International Periodical Directory (1999) reports that of the total 1,57,000 serials listed in the Directory, 10,332 are available exclusively online or in addition to its paper counterpart.

8.3 Electronic Books

An electronic book is defined as a portable hardware and software system that can display a large quantity of readable textual information to the user and let the user navigate through this information. An E-book is digital reading material that a user can view on a desktop or notebook personal computer, or on a dedicated, portable device with a large storage capacity (1,500 to 500,00 pages) and the ability to download new titles via a network connection. More and more traditional book publishers, as well as those catering to the professional and business communities, are seeing the potential of digital publications and are working to ensure they enjoy a fair share in the market's growth. In fact, analysts expect the market for E-book titles and other electronic documents to exceed US\$ two billion in the next few years.

The electronic book market consists of two distinct components i.e. i) electronic book consisting of digital material or contents; and ii) electronic book hardware including E-book reading appliance. The digital material or

contents that makes an electronic book are simply textual and graphical files consisting of bits that can be transported on CD-ROM or other storage media or delivered over a network connection. It is designed to be viewed on some combination of hardware and software ranging from dumb terminals to Web browsers, on personal computers to the new reading appliances. Every electronic book cannot be viewed using any viewing technology. Some E-books use formats that can be viewed using specific viewing technologies only while others are most versatile and can be easily delivered to many diverse viewing environments.

A number of hardware options are available for using an E-book that includes: i) dedicated E-book readers; ii) PDAs and pocket PCs with book reading software; and iii) Hybrid devices. Rocket e-book, a paperback sized device that could hold about 10 books (4000 pages of text and graphics) can be considered as the first modern E-book reading appliance launched by the Nuvomedia in 1998.

PDAs and Pocket PCs are usually smaller than the dedicated E-book reader and primarily function as personal organisers. Often they also offer Internet access, word processing, spreadsheet and MP3 playing capabilities. With E-book contents and their viewing software becoming available for the PDAs and pocket PCs, they are increasingly being used for reading E-books. Palm Reader, MobiPocket Reader and Microsoft Reader are some of the E-book readers or viewer software.

Electronic books are also available on the Web either free or on payment. Project Gutenberg started digitising public-domain texts for download in 1992. The project has a team of volunteers for re-keying texts. It offers more than 3,000 public domain titles free. New kinds of businesses are now emerging on a new scale involving a large number of publishers to make thousands of books available online for libraries and individuals at relatively lower cost. Three major companies that have recently emerged in this market are Questia, ebrary and NetLibrary. All three platforms offer E-books, journal articles and encyclopaedia articles besides other services as value addition.

8.4 Electronic Preprints and E-prints

Electronic preprints are research articles that are made available for distribution through the network in electronic format before they go through the process of peer reviewing. Ginsparg preprint archive (<http://www.arXiv.org/>), started in 1991, has become a fundamental means of communication for a growing number of fields, starting with theoretical

high-energy physics, later spreading to other areas of physics, and now also to computer science and mathematics. Ginsparg's preprint archive is a sterling example of how technology can lead to a sudden, profound, and beneficial transformation. This archive processes 35,000 submissions every year, which is substantial, but small compared to around two million papers in all science, technology, and medicine areas published every year. It receives two-thirds of its two million weekly hits from institutions outside the United States, including many research facilities in developing regions. The archive has become indispensable to researchers world wide, but in particular to research institutions that would otherwise be excluded from the front line of science for economic and sociological reasons. The success and wide adoption of arXiv has prompted new thinking about the reform of scientific publishing in other disciplines. Scientists have become aware of benefits of open archiving, such as relief from high-priced journals, reduction of time in announcing research findings, and the provision of access to all interested researchers through the Internet. As a result, other E-servers have been set up and the movement to free scientific publishing from financial restrictions has been growing steadily.

"E-prints", is the term generally used to describe electronically mounted copies of the final, peer-reviewed versions of journal articles. Among the best known proponents of E-print developments is Dr. Stevan Harnad of the University of Southampton. Dr. Harnad advocates for authors to self-archive their published papers (postprints) which, if adopted widely, would lead to the ultimate removal of cost barriers for the exchange of publicly funded research information. These developments have generated much debate and a number of international initiatives have evolved to refine and standardise the archiving procedures. One important international movement is the Open Archives Initiative (OAI), which aims to develop and promote the use of a standard protocol, known as the Open Archives Metadata Harvesting Protocol (OAMHP), designed for better sharing and retrieval of E-prints residing on distributed archives. There are various forms of open archiving. The term "self-archiving" is often used to refer to the process whereby individual authors submit their own papers to a server or archive of their choice. There are 'institutional archives', where authors submit eprints to a server administered by an organisation or scholarly society, commonly their university or research institute; there are also discipline-based archives and other specialty archives.

The other information resources available via the Internet includes electronic conferences, courseware, tutorials, guides, manuals, patents,

standards, technical reports, electronic theses and dissertations, print-on-demand, dictionaries, encyclopaedia, portal sites or meta resources. These resources are not described here because of limitation of space.

9 Digital Imaging Technology

Digital imaging is the process of converting paper documents including text, graphics, or pictures into digital images that can be made accessible over electronic networks. A digital image, in turn, is composed of a set of pixels (picture elements), arranged according to a pre-defined ratio of columns and rows. An images document file can be managed as a regular computer file and can be retrieved, printed and modified using appropriate software. Further, textual images can be OCRed so as to make its contents searchable. Digital imaging is an inter-linked system of hardware, software image database and access sub-system with each having their own components.

Several digital library projects are concerned with providing digital access to materials that already exists with traditional libraries in printed media. Scanned page images are practically the only reasonable solution for institutions such as libraries for converting existing paper collection (legacy documents) without having access to the original data in computer processible formats convertible into HTML / SGML or in any other structured or unstructured text. Scanned page images are the natural choice for large-scale conversions for major digital library initiatives. Printed text, pictures and figures are transformed into computer-accessible forms using a digital scanner or a digital camera in a process called document imaging or scanning. The digitally scanned images are stored in a file as a bit-mapped page image, irrespective of the fact that a scanned page contains a photograph, a line drawing or text. A bit-mapped page image is a type of computer graphic, literally an electronic picture of the page which can most easily be equated to a facsimile image of the page and as such they can be read by humans, but not by the computers, understably "text" in a page image is not searchable on a computer using the present-day technology. An image-based implementation require a large space for data storage and transmission. There are several large projects using page images as their primary storage format, including project JSTOR (www.jstor.org) at Princeton University funded by the Melon Foundation. The project Jstor has a complete set of more than 120+ journals scanned and hosted on web servers that resides at the University of Michigan and is mirrored at Princeton University. Using technology developed at Michigan, high resolution

(600 dpi) bit-mapped images of each page are linked to a text file generated with optical character recognition (OCR) software. Linking a searchable text file to the page images of the entire published record of a journal along with newly constructed table of contents, indexes, permits high level of access, search and retrieval of the journal material previously unimaginable (Guthrie, 1997).

Capturing page image format is comparatively easy and inexpensive, it is a faithful reproduction of its original maintaining page integrity and originality. The scanned textual images, however, are not searchable unless it is OCRed, which in itself, is a highly error prone process specially when it involves scientific texts.

10 Artificial Intelligence and Expert Systems

An expert system employs human expertise captured in a database to solve problems which usually require human expertise. It either supports or automates the process of decision making in an area in which experts perform better than non-experts. It is also known as "Expert Computing Systems", or "Knowledge-based Systems" or "Intelligent decision support systems". The expert systems use subject-specific knowledge in addition to general knowledge. They are known to perform well in specified subject area or problem area. The knowledge-based systems are flexible, which means that it can be modified and expanded by adding or deleting from its knowledge base without the need for rewriting the program itself.

The 1950s and 1960s were the period when artificial intelligence was primarily concerned with the development of computer programs that could perform tasks that were considered to require a high degree of intelligence, e.g. games such as chess; theorem solving, etc. A key development during this period was the idea of heuristics, an important precursor to the advent of expert systems. Heuristics can be defined as guidelines for choosing among alternative actions. They can be used as shortcuts to direct the search for a solution along more promising lines, even if an optimal solution is not guaranteed. Another key development was the creation of LISP, a symbolic programming language.

The expert systems explosion of late 1970s and early 1980s was caused by the realisation that computer programs could perform useful tasks at expert levels of performance, if they were endowed with large amounts of specialised knowledge, and were constrained to narrow but real domains. Research in this period turned towards trying to clone human experts by

capturing their experiential knowledge. Some of the successful expert systems of this period were:

- Mycin, a computer program designed as a decision aid for doctors, which when given data describing a patient's symptoms could diagnose infectious blood diseases and prescribe therapies appropriate to the disease diagnosed.
- R1, an expert system used by Digital Equipment Corp., which when given a set of specifications of the computer system requirement of a customer would select the appropriate computer components and peripherals, check for inconsistencies, design the layout of the entire system and print out a detailed order.
- Prospector, a program to detect commercially viable ore deposits based on geological data.

These successes led to the idea of an expert system that had the basic structure in which rules could be entered, and the matching capability to make inferences based on the rules. The simplicity of this concept led to the rapid commercialisation of expert systems. Thus, it was with the start of the early 1980s, that knowledge-based systems were applied to a wide variety of areas.

11 Internet Technology and Services

The Internet has revolutionised our society, our economy and our technological systems. Over the past century, important technological developments have created a global environment that is drawing people of the world closer and closer together. About fifteen years ago, most of the world knew little or nothing about the Internet. The Internet was then a private network accessible only to computer scientists and researchers who used it to interact with colleagues in their respective disciplines. Today, the Internet's magnitude is a thousand times more than what it was only a decade ago. It is estimated that about 60 million host computers on the Internet today serve about 200 million users in over 200 countries and territories. Today's telephone system is still much larger: about 3 billion people around the world now talk on almost 950 million telephone lines (about 250 million of which are actually radio-based cell phones). Also, the total numbers of host computers and users have been growing at about 33 per cent every six months since 1988 – or roughly 80 per cent per year. The telephone service, in comparison, grows an average of about 5-10 per cent per year. That means if the Internet keeps growing steadily the way it

has been growing over the past few years, it will be nearly as big as today's telephone system by about 2007.

The Internet has revolutionised the computer and communications world like nothing before. The invention of the telegraph, telephone, radio, and computer set the stage for this unprecedented integration of capabilities. The Internet is at once a world-wide broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without barriers of geographic location. The Internet represents one of the most successful examples of the benefits of sustained investment and commitment to research and development of information infrastructure. Beginning with the early research in packet switching, the government, industry and academia have been partners in evolving and deploying this exciting new technology. Today, terms like "Yahoo" and "Google" are a common part of our vocabulary.

11.1 World Wide Web

The World Wide Web- known as WWW, W3 or simply, the Web – is one of several Internet resource discovery tools developed to help people publish, organise and provide access to information on the Internet. The WWW can be defined as a hypertext, multimedia, distributed information system that provides links to hypertext documents, as well as to many other Internet tools and databases. There are several features that are unique to the Web that make it the most advanced information system to appear on the Internet to date.

11.1.1 Importance of the Web

The World Wide Web is important for libraries because it provides an extremely powerful method of organising and providing access to information. It can provide one interface to a large variety of network information resources and systems. With the Web and its browsers libraries can:

- electronically publish anything that they now publish on paper
- provide access to in-house hypertext documents or to hypertext documents available on the Internet
- create electronic orientation services with floor maps and descriptions of services
- provide access to Internet tools such as TELNET, gopher, FTP and WAIS through a single interface.

- create interface to in-house databases or bibliographies
- collect information from patrons through the forms feature.

With all its power, the Web is the most important towards creating electronic libraries. It provides a mechanism to present a wide variety of information resources to Internet users in a simple, efficient and effective manner.

Other important services offered by the Internet that the library and information professionals should be conversant with are electronic mail (E-mail), electronic conferences, news groups, remote login, telnet, File Transfer (FTP), Gopher, Archie, Veronica, Wide Area Information Search (WAIS), Web Chat and Internet Relay Chat (IRC).

12 Digital Libraries

The increasing popularity of Internet and developments in Web technologies act as catalyst to the concept of digital library. While the Internet serves as the carrier and provides the contents delivery mechanism, the Web provides the tools and techniques for content publishing, hosting and accessing. Today's digital libraries are built around Internet and Web technologies with electronic journals as their building blocks.

The libraries will not become digital libraries, but will rather acquire access to ever growing digital collections on behalf of their users. Most of these collections are being made available by external sources like commercial publishers, collections mounted by scholarly societies, resources at other libraries, electronic journal sites, etc. The electronic journals have become the largest and fastest growing segment of digital collections for most libraries. The Internet has long been a favourite media for experimenting with electronic publishing and delivery. The technology allows creation of fully digitised multimedia products and make them accessible through the Internet. Technological changes, especially the Internet and Web technology, continue to attract more and more traditional players to adopt it as a global way to offer their publications to the international community of scientists and technologists. Most of the important publishers now have their web-based interfaces to offer full-text of their journals. The current electronic publishing market consists of traditional players offering electronic versions of their print journals as well as several new enterprises offering new products and services that are "borne digital". The market also has several subscription agents in their new role as electronic aggregators.

Besides electronic journals, there are several online databases that are now available through the Web including Medline (several versions), AGRICOLA and ERIC. Most online search services like STN and DIALOG also have their Web-based interfaces. Reference works like encyclopedia, dictionaries, handbooks, atlases, etc. are also making their electronic appearance on the Web. However, amongst electronic resources created exclusively for the Web, imbibing all features and facilities offered by the new technology, include Web-based educational tutorials called "online courseware". The online courseware is proliferating the Web as a strong contender for distant education. Telecampus, Canada (www.telecampus.edu) lists more than 12,000 online courseware available on the Web. Moreover, highly specialised Websites are now coming up in various disciplines which offer information in totality including all kinds of resources in electronic format, EI Engineering Village (<http://www.ei.org/>), ISI Electronic Library (<http://www.isinet.com>), IEEE/ IEE Electronic Library (<http://www.ieee.org/>), Engineering Sciences Data Unit (<http://www.esdu.com>) are some of the important examples.

Electronic resources accessible on the Web for free or for a fee are undeniably major and important constituent of a digital library. Librarians and information professionals should be well-versed with these resources, options and method for making them accessible to their users.

13 Information Technology-based Library Services

The electronic resources and associated technologies are only a means to generate services keeping its potential users in mind. Like printed resources are used in traditional libraries to generate services by the library staff, the digital resources are used to generate services using software driven Web-based interfaces. Computer programs substitute for the intellectually demanding tasks that are traditionally carried out by skilled professionals. Activities that require considerable mental activities, like reference service cataloguing and indexing, seeking information, etc. are performed by computer programs through Web-based interface.

New information technology can potentially support a range of traditional and non-traditional library services. Most of the library services generated using digital resources resemble closely to those generated manually with improvements and modifications to suit the requirements of automated services. However, digital resources have also been used to generate innovative services that did not have a counterpart in manual parlances.

These services are:

13.1 Traditional Library Services Modified Using New Information Technology

13.1.1 OPAC to webPAC

Remote access to the library catalogues was possible only through a telnet connection till recently. The Web-based interfaces are now available for most of the integrated library software packages including Libsys. Websites are increasingly providing links to their webPAC instead of telnet links to their Library OPAC. Exploiting the provisions of hyperlinking that the web provides, various searchable elements of a bibliographic record in a Web PAC are hyperlinks to other records in the database. For example, an author is a hyperlink to all records in the database for that author, a series is a hyperlink to all serial titles under that series; a keyword for a record is a link to all records in database having that keyword, etc. In effect, a Web PAC adds software-based functionality to a conventional OPAC. A user has additional incentives to visit the library web page hosting webPAC. With Web-based resources and services in place, many libraries are phasing out their dumb terminals. The library Websites are increasingly becoming a more logical gateway to the catalogue and other Web-based library resources. The acceptability of Web-based interfaces to the Library OPAC is much greater because Web interfaces are familiar to the users with its graphical and navigational interfaces. The users can click complex subjects instead of typing them or remembering complex unix commands.

13.1.2 CD-ROM to Web-based Indexes and Databases

Availability of CD-ROM in the late 1980s, as a media with high storage capacity, longevity, and ease of transportation triggered production of several CD-ROM information products which were earlier available through online vendors or as conventional abstracting and indexing services in printed format. Some of the important secondary services including "Guide to Current Periodical Literature" (H. W. Wilson) discontinued their print version in favour of CD-ROM version which had improved functionality in terms of search and browsing interfaces. The libraries are witnessing yet another migration from bibliographic databases on CD-ROM to Web-based bibliographic databases akin to the one that was witnessed earlier from print based secondary services to CD-ROM databases. This phenomenon has further been fuelled with the availability of Web-interfaces for most of the online search services. The Web-based interfaces provide several

advantages to users that are either not possible or not yet available on CD-ROM. Most Web-based bibliographic databases use hyperlinks and other facilities possible in a web documents including link to the full-text of articles to a publisher's Website. Several bibliographic databases have discontinued their CD-ROM version in favour of web-based version. Besides advantages mentioned above, migration to Web-based services open up resources to remote users.

13.1.3 Manual Reference Service to Digital Reference Service

Reference service and imparting instructional training to the library users are key areas of activities for any library. The technology now allows reference librarians to reach out to the users using the network instead of waiting at the reference desk for users to come by. Besides, imparting instructions on mechanisms of using a library, a reference librarian is also involved in delivering reference service that require deep intellectual understanding of subject. Although automated libraries are not yet sufficiently advanced to offer interactive reference services, electronically-mediated reference services are increasingly available through libraries and information centres.

Digital reference service, also called "Ask-An-Expert" or "Ask-A-Librarian" services are Internet-based question and answer service that connect users with individuals who possess specialised subject knowledge and skill in conducting precision searches (Davis, 2000). As opposed to static Web pages, digital reference services use the Internet to place people in contact with people who can answer specific question and instruct users on developing certain skills. The people who serve as digital reference experts (also called volunteers or mentors) are most of the time information specialists, affiliated to various libraries.

How does it Work?

Most "Ask-a-Librarian" services have a web-based question submission form or an e-mail address or both. Users may submit questions by using either of the forms. Once a question is read by a service, it is assigned to an individual expert for answering. An expert responds to the question with factual information and or a list of information resources. The response is either sent to the user's E-mail account or is posted on the web so that the user can access it after a certain period of time. Many services have informative web sites that include archives of questions and answers and a set of FAQs. Users are usually suggested to browse archives

and FAQs before submitting a question in case sufficient information already exists.

Virtual Reference Desk (<http://www.vrd.org/>) provides resources and links to experts that offer digital reference services. The site hosts searchable database of high quality "ASK-A" service along with alphabetical and subject wise listing. Virtual Reference Desk also hosts a listserv called "Dig-Ref" to promote and explore the growing areas of digital reference services.

13.1.4 Manual Reference Service to Real time Digital Reference Service: Library Chat Rooms

Several libraries have started experimenting with offering real time digital reference service, using chat software, live interactive communication activities, call counter management software, Web contact software, bulletin board services, interactive customer assistance system or related technologies.

Many libraries are experimenting with Internet chat technology as an innovative method to extend and enhance traditional and remote reference service. While digital reference service is asynchronous method of information delivery, the Internet chat providing the benefit of synchronous communication between a user and a reference librarian (or mentor). Interactive reference services facilitate a user to talk to a real, live reference librarian at any time of day or night from any where in the world. Unlike with email reference, the librarian can perform a reference interview of a sort by seeking clarifications from the user. The librarian can conduct Internet searches and push websites onto the patron's browser, and can receive immediate feedback from the patron as to whether his or her question has been answered to his satisfaction. Most libraries currently involved in real-time reference service are part of a collaborative network so that they can share staffing and work around the clock to truly provide reference service any time. Library of Congress Collaborative Digital Reference Service (<http://www.loc.gov/rr/digref/cdrshome.html>) is one of such services. Several institutions including Cornell University, Internet Public Library, Michigan State University and North Carolina University are offering Internet chat-based services using software like LivePerson, AOL Instant Messenger, Conference Room and Netscape Chat. The librarians have observed that their relatively new chat-based service logged significantly more questions in a relatively short time than their well-established E-mail digital reference service.

LiveRef(sm) (<http://www.public.iastate.edu/~CYBERSTACKS/LiveRef.htm>) maintains an online registry of real-time digital reference services.

13.1.5 Manual Document Delivery to Electronic Delivery Services

Abstracting and indexing services have proved themselves as most effective means of finding recent and retrospective published research work. The effectiveness of these secondary services are further enhanced with the availability of these secondary services on CD-ROM with efficient search interfaces and other features that are possible only in electronic media.

Once a researcher gets bibliographic references relevant to his research work, the more arduous task of locating the full-text of research article begins. While the parent library may cater only to 10 - 20 per cent of his references, remaining articles may have to be arranged through Inter Library Loan (ILL) or through Document Delivery Services (DDS) which can be very time consuming. Most Libraries use commercial (Informatics India) and non-commercial (BLLD and INSDOC) document delivery services to ensure quick and efficient access to primary information for the library users. Most online search services like DIALOG, ESA /IRS and STN have been offering manual document supply services since their inception. The process is labour-intensive and time consuming.

The term "electronic document delivery systems" implies delivery of electronic version of a document that might involve reproduction of an electronic copy of a document if it is not available in electronic format. The libraries had been using fax machines for immediate delivery of photocopies of articles via telephone lines. The first use of electronic document delivery was based on scanning technology. With maturity of scanning equipment and technology, document supply services started scanning the documents as bitmap page images. Applications are built in such a way so as to automatically produce a hard copy together with a header page containing the address of the applicant which can again be send by snail mail or facsimile. A software package known as "Ariel" is used in several libraries in developed countries for delivery of scanned articles via Internet. The Ariel software is loaded on an Internet-enabled computer, can receive and send electronic information to other libraries which have installed Ariel. The ADONIS system developed in the late 1980s is a document delivery system based on bit-mapped page images.

Availability of most of the peer reviewed research journals in electronic format, inexpensive technology to scan articles and improved electronic

delivery mechanisms are some of the enabling factors that has contributed to well-established electronic document delivery system now available commercially. More recently most of the secondary services that were available on CD-ROM or through online search services are now available on the Internet where the bibliographic references are linked to their full-text on the publisher's site. The technology has now been perfected and there are several electronic document delivery services that allow a user to download an article in full-text from their site or deliver them electronically as attachment to e-mails. Most electronic publishers and aggregators like OCLC, Blackwell, OVID, etc. are offering full-text of articles through their web sites. Different vendors have various payment options; some charge each time the journal is used, whereas others provide open access for a set annual fee. A user who wishes to have the item delivered can enter a credit card number and specify a delivery method (postal, UPS, fax, E-mail, etc.) and indicate whether it is a rush item (with a rush order fee attached.)

The ADONIS (Article Delivery Over Network information Systems) can be considered as a landmark development in electronic document delivery system. The project was launched by a consortium of five major publishers – Academic Press, Blackwell's Scientific Publications, Elsevier Science Publications, Pergamon Press and Springer Verlag. The project uses combination of laser scanning, printing and digital optical storage technology for storage and retrieval of complete pages of over 650 scientific, technical and medical journal articles. The issues of journals are available on CD-ROM with weekly updates for distribution to each centre in various countries licensed to use the system for document delivery.

14.2 New Web-based Library Services

14.2.1 Virtual Library Tours

Several library Websites facilitate virtual guide to the physical facilities including collections, services and infrastructure available in the library through their web sites. The combination of the following three Web-based interfaces are used to facilitate the virtual library tours:

14.2.2 Library Maps and Floor Plans

Most library Websites provide library layouts and floor plans to guide users to physical location of facilities and services along with link to relevant information. Client-side image maps are used to make various parts of floor plans as clickable image maps. An example can be seen at the Central Library Home Page of the Central Library, IIT Delhi at: <http://www.iitd.ac.in/acad/library/layout.html>.

14.2.3 Photographic Views

A view of 360° photographic environment using plug-ins like Quick Time and iPix are available at a few library sites. Examples can be seen at Botsford General Hospital Library site. (<http://www.botsfordlibrary.org/tour.html>).

14.2.4 Library Websites

Academic libraries in developed countries started using Web technology to create home pages as starting points or as gateways for searching information about the library. A home page reflects characteristics of an academic institution. It provides an opportunity to the library to propagate its services and facilities to the academic community worldwide. The home pages of libraries are increasingly used as an integrated interface designed to deliver detailed information about a library as well as to provide access to all computer-based services offered by a library.

Besides offering information, the library web sites of academic institutions invariably hosts subject gateways or subject portals that contains links to web resources for subjects of interest to the institution. Most of the services (modified or new) included in this article are offered through the web sites of most of the academic institutions especially in developed world. The IIT Delhi Central Library also offers several of these services through its web site available at <http://www.iitd.ac.in/acad/library/>. The Sun-site Digital library at University of California at Berkley (<http://sunsite.berkley.edu/libweb/index/html>) lists more than 4,000 libraries having web sites.

14.2.5 Subject Gateways or Library Portals

The Web, being a hypermedia-based system, allows linking amongst electronic resources stored on servers dispersed geographically on distant locations. The portal sites or gateways redirect a user to the holders of the original digital material. The librarians, being the earliest users of the Web, started to gather and organise link to important Web-based resources on various subjects.

A subject gateway can be defined as facility that allow easier access to Web-based resources in a defined subject area. The simplest types of subject gateways are sets of web pages containing list of links to resources. Some gateways index their lists of links and provide a simple search facility. More advanced gateways offer a much-enhanced service via a system

consisting of a resource database and various indexes, which can be searched and / or browse throughout a Web-based interface (O'Leary, M., 2000).

Subject gateways are also known as Subject-based Information Gateways (SBIGs), subject-based gateways, subject index gateways, virtual libraries, clearing houses, subject trees, pathfinders, etc. Subject gateway is an important component of a library Website designed for the library users so as to help them discover high-quality information on the Internet in a quick and effective way.

In the traditional information environment human intermediaries, such as publishers and librarians, filter and process information so that users can search catalogues and indexes of organised knowledge as opposed to raw data and information. Subject gateways work on the same principle, i.e. they employ subject experts and information professionals to select, classify and catalogue Internet resources to aid search and retrieval for the users. Users are offered access to a database of Internet resources descriptions which they can search by keywords or browse by subject area. A description of each resource is provided to help users assess very quickly its origin, content and nature, enabling them to decide if it is worth investigating further. In the process users are benefited from the expertise of librarians and subject experts with subject gateways rather than having to locate, evaluate, filter and organise the resources themselves. Specialised software are available as freeware or as priced software to create and maintain professionally developed subject gateways. Some of the major portal sites or gateways that provide access to electronic resources on the Internet are as follows:

WWW Virtual Library	http://www.edoc.com/
Internet Public Library	http://www.ipl.org/
Michigan Electronic Library	http://mel.lib.mi.us/
Penn Electronic Library	http://www.library.upenn.edu/resources/
BUBL Information Service	http://bubl.ac.uk/
Argus Clearing House	http://www.clearinghouse.net/
Internet Index	http://sunsite.berkeley.edu/nternetIndex/

14.2.6 Web-based User Education

The www provides a dynamic environment for distributing information over a large network and Web-based instructions is a suitable tool to do so.

Web-based guides and teaching tools can be easily updated, accessed, and printed on demand. They may include colour graphics and screenshots. Web-based user education provides a high degree of interactivity and flexibility to the users offering them the benefit of self-paced, graduated to each from basic to highly advanced levels and designed in a wide range of formats that accommodate diverse learning styles. The proliferation of digital resources will generate greater demands on reference and instructional services. With availability of digital resources that can be used anywhere at any time, requirement for instructional and reference services would also grow. Failure to develop both the technological aspects and required service components would lead to under utilisation of digital resources. The library websites can use Web-based user education for imparting training to users in the following areas:

- i) Basic library skills along with glossary of library terms;
- ii) Using Library OPAC/ Web PAC, locating books, magazines and other library materials;
- iii) Instructions for searching CD-ROM and Web-based databases and other electronic resources; and
- iv) Instructions on subject searching training, using Boolean operators and searching Internet resources through search engines.

The web technology provides for incorporating both synchronous and asynchronous interactivity in the Web-based user education.

14.2.7 Frequently Asked Questions (FAQ)

Most library Websites have Frequently Asked Questions (FAQ) along with their answers. Some libraries have database-driven FAQs along with search interface. These FAQs are generally on the services and facilities that the library provides. These FAQs generally do not include reference questions.

14.2.8 Library Calendar

The library calendar lists events or show information for forthcoming events. Library calendars have improved look and functionality with JavaScript or special software.

14.2.9 Web Forms

Most library Websites have Web forms for inviting feedback from the

users such as:

- i) Suggestions for services;
- ii) Users Survey;
- iii) Comments on the Website and suggestions to improve it;
- iv) Requests for library to acquire certain titles or materials;
- v) Reference Service (often Ask-a-Librarian); and
- vi) Interlibrary loan or other document delivering services

14.2.10 Bulletin Boards, Threaded Discussion Forum and Listservs

Several libraries are using bulletin boards, threaded discussion forum and listservs to help promote and evolve Web-based library services. Most libraries use bulletin board system as an electronic message system to propagate or announce the services and new activities. The bulletin board system is also used as an interactive interface to invite suggestions on activities and services of a given library. It can also be used as an interface to distribute library services. Messages in a bulletin board system can be written by anyone and are stored in a common area for any one to read.

Discussion forum allow open exchange of messages on a topic of common interest. Discussion forum allow users to initiate a discussion on new topics, replying to an ongoing discussions (called thread). All messages for a given topic or thread are grouped together for the convenience of users. Discussion forums are basically modified bulletin boards, which have on added feature of dividing messages into logical groupings called thread. Threads enable a person to focus on a particular topic and see inputs from many individuals making comments on the topic.

A listserv is a mailing list program wherein a group of people with common interests are connected by E-mail. Any mail sent to the listserv is distributed to all those who have signed up for the list. Several libraries host listservs for the users for providing them a platform to discuss and share their views on books that they have read, or discuss specific books / authors.

15 Skill Development in IT for Librarians

The Library and information centers are going through a process of transformation with increase in the use of new information technology its products and services in libraries. The librarians and information workers

find difficulties in coping with fast technological developments due to lack of sufficient continuing education for them. A great deal of strategically planning is required to address this issue.

While it is important to revise library science curriculum with introduction of strong components of IT for fresh library science graduates, it is equally important to train existing manpower in the libraries through continuing educational programmes. Continuing education may include educational activities primarily designed to keep practicing librarians and information professionals abreast of their particular domain in library, and to provide them with training in new fields of IT. Continuing education activities in our country, is generally offered on irregular basis through training programmes organised by institutions, individuals, association and departments of library and information science of universities.

The article has briefly described major new information technologies, its products and services and associated skills that are required for the development of services in the libraries. Specific IT skills relevant for courses and programmes that can be offered as continuing education may include:

- i. Library Automation.
- ii. Online Information Retrieval.
- iii. CD ROM / DVD as media and it's networking
- iv. Office Automation and Electronic-based Communication Systems.
- v. Electronic document delivery.
- vi. Electronic reference service and real-time reference services
- vii. Database Management Systems.
- viii. Web Site Designing.
- ix. Internet, Intranet and Extranet.
- x. Multimedia applications in libraries.
- xi. Internet: Resources and Services.

16 Conclusion

Rapid growth of information technology, particularly, the Internet and associated technologies, has opened up an entirely new medium for providing improved information services and resources for the users. As information professionals, we have the opportunity not only to play a leading role in the organisation and navigation using new tools and technologies,

but also in the development and maintenance of IT-based services and resources for our users and organisations. With availability of Web-based resources and services, the local collection of a library is not the only source of information for a user. The users are interacting virtually with the library collections and resources as well as with host of resources that the librarian did not select or may not even know about them. The librarians can no longer stay behind the desk to wait for the users to come, assuming that the users would approach them at the right time and for the right things. The role of the library as a primary aggregator of content for its users is less and less unique. In an environment of self-service databases, electronic forms, web information and the growth of distance education, a user is likely to approach the librarian after he has already begun his search, but was not satisfied with the results.

The future will require the librarians to reorient themselves, think creatively and adopt new technology to generate services and resources where their skills of structuring and organising resources are put to its best use. With myriad of disorganised and unverified information, the Web is in need of librarians who are trained in the structuring and organising information, have the ability to locate and evaluate information resources, and have in-depth subject expertise. If the librarians are committed to sustain their roles as providers and facilitator of information in the emerging and competitive space of higher education, they would need to adopt new technology, interact with users to learn about their requirements and expectations. The librarians have to join the academic community as facilitators and collaborators, guide the students through the complex maze of print and digital resources, teaching them how to search effectively and helping them judge the quality and usefulness of the information that they encounter. The opportunities are limitless especially in the chaotic scenario of Internet.

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Bangladesh National Library Services

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1 Introduction

After the partition of the subcontinent in 1947 the Government of Pakistan established the National Library of Pakistan in Karachi and a provincial book deposit branch of the Pakistan National Library in Dhaka in 1967. In fact that book deposit branch was the embryo of the National Library of Bangladesh which came into being after the independence of the country in 1971. After the Liberation War of Bangladesh it was keenly felt by all quarters that a National Library is indispensable for the new born nation. Considering the necessity and importance, the Government of the People's Republic of Bangladesh resolved to set up the National Library of Bangladesh in Dhaka. The Library started functioning with the manpower and resource materials inherited from the Provincial Book Deposit Branch in Dhaka. Later on, in 1973 the two national organisations, namely

- (i) The National Archives of Bangladesh and
- (ii) The National Library of Bangladesh were merged under the name of the Directorate of Archives & Libraries under the Sports and Culture Division, Ministry of Education.

The Directorate was first housed in two separate rented places first at 106 Central Road and then at 372 Elephant Road, Dhaka. A new building for the National Library of Bangladesh was built in 1985 and the Library was shifted to its new place called The Jatiya Granthagar Bhavan (National Library Building) at 32 Justice S. M. Murshed Sarani, Agargaon, Sher-e-Bangla Nagar, Dhaka-1207. The National Library of Bangladesh is currently run by the Directorate of Archives and Libraries under the Ministry of Cultural Affairs. The National Library is the legal depository of all new books and other printed materials published in the country under the Copy Right Law (Modified in 2000) of Bangladesh. Organisation and professional set-up of the National Library of Bangladesh is one of the two components of the Directorate of Archives and Libraries under the Ministry of Cultural Affairs. The Director of the Directorate exercises the administrative and

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financial powers delegated to the Heads of the Directorate of the Government.

2 Library Set-up

The National Library consists of the following four sections:

- a) Bibliography Section;
- b) Processing, Maintenance and Reader Service Section (Library Section);
- c) Microfilm Section (Reprographic Section) and
- d) Computer Section (Library Automation).

The above 4 sections are manned by 7 (seven) Class-I Gazetted Officers and 34 staff members most of whom are technical. The total allocated strength of manpower is 41 as follows: Chief Bibliographer/Deputy Director (Library); 1 Bibliographer (Acqui -1, Compi-1, Publi- Ref.-1); 3 Assistant Director (Lib.); 1 Microfilm Officer; 1 Programming Officer; 1 Class III Technical/semi tech. staff member; 27 Class IV Staff members; Grand total = 41 Functions.

The major functions of Bangladesh National Library are:

- a. To acquire books and other publications published in the country under the copyright law of the land and to preserve them permanently.
- b. To compile and publish National Bibliography, Abstract and Indexes to the newspaper articles, Directory of Publishers, Union Catalogues, etc.
- c. To maintain and develop a national collection of library materials.
- d. To provide various services to the concerned users.
- e. To provide modern facilities of library services to the users including quick and easy retrieval through the automation of the collection.
- f. To preserve the library and information materials in a modern and scientific manner.
- g. To act as the country's international bibliographical/documentation centre including the distribution of ISBN.
- h. Provides informative assistance/guidelines to the Government/ Professional Associations in formulating the country's Library Act, Policy, and in planning and promoting publishing industries.

Acquisition Policy of Bangladesh National Library acquires through purchase, donations, etc books, journals, etc in accordance with the following principles:

- a. Books and Journals on Bangladesh published anywhere in the world.
- b. Books by Bangladeshi authors published abroad.
- c. Contemporary books by Nobel Prize winners, the national level best books of other countries.
- d. Standard books on Asian countries and on other countries also.
- e. Carefully selected latest books on all branches of knowledge.
- f. Standard reference books.
- g. Biographies of eminent personalities of the world.
- h. Donation of institutional/personal collection of books of national level personalities.

3 Collections

The Collection of Bangladesh National Library is the nation's pride. The principal characteristic of its collection is that it covers all major disciplines and branches of human knowledge, i.e. Literature, Cultural Heritage, History, Arts, Archaeology, Science and Technology, Medical Science, Engineering, Economics, Agriculture, Library and Information Management, Development Administration, Environment, Women's Affairs, HRD, etc and is preserved in a scientific manner. In addition to country's all most all publications the library has a large collection of foreign representational publications especially on Asian countries and more specifically related to South Asian Studies. The library enriches its collection by various means, i.e. acquiring publications under Copyright Act, purchase, institutional/ personal donations, complimentary copies, etc. the following are the National Library's collection data up to September 2003. Total Number of Books and Bound Volumes - 5,00,000. Current Bengali dailies' titles - 55. Current Bengali weekly titles - 75. Current Bengali periodicals titles - 105. English dailies' titles - 6 weekly - 10 periodicals - 20 Number of Maps - 3000 Microfilm - 60 Rolls Microfiche - 125200 Number of preserved Bengali dailies' titles - 165 weekly - 313 periodicals - 627 English dailies - 25 weekly - 36 Periodicals - 235 Number of National Bibliography published - 20 issues from 1972 to 1991 Library maintains special collections for researchers. International Systems followed. National Library follows

the following international systems for its technical processing:

- a. Dewey Decimal Classification -20th edn.
- b. Anglo American Cataloguing Rules 2nd edn.
- c. Sears list of subject headings - 13th edn.
- d. CDS/ISIS software.

4 Physical Facilities and Maintenance

Physical facilities of Library Building Area of Library Building - 2.36 acre. Construction area - 1,04,880 sft. Carpet area of Library Building - 61.555 sft. Stack area - 48.223 sft. Reading room - 8,000 sft. Exhibition room - 3200 A.C. Auditorium seating capacity - 300 seats.

The maintenance of the building, electrical appliances, air-conditioning and security measures are carried out by the concerned Departments of the government. User's Servicesa. Reader Service: Provides readers' services. It has three reading rooms (one for Bangla materials and one for English and one for newspapers) covering 8,000 sft. space are

- a. The Library maintains both card and sheaf catalogue systems.
- b. Reference Service: Reference service to individual and departments, institutions are rendered in the light of requirement.
- c. Special Bibliography: National Library provides special bibliography compilation service on request to the potential research scholars of various universities/ institutions.
- d. Lending: Lending of books to the Library members is yet to be introduced. However government office, libraries, institutions as exception can avail themselves of the lending facilities for official purposes.
- e. Photocopy Service: Members of the Library can have photocopy service for research purposes at the charge of TK. 1.00 per impression.
- f. ISBN Service: For standardising Bangladesh's books internationally, ISBN distribution service is provided to the concerned publishers and individual authors from the National Library. So far ISBN has been distributed to 375 publishers and for 6,500 books.

- g. **Microfilm Service:** Microfilm reading services on some selected subjects and areas are given to the concerned research scholars in the light of the requirement. One of the important services to the users is map reading service, which is given under special arrangement. **International Liaison:** The National Library of Bangladesh is the country's professional national institution for IFLA, Asia Pacific Cultural Centre for UNESCO (ACCU), Conference of Directors of National Libraries in Asia and Oceania (CDNLAO).

Modern facilities added in order to modernise the National Library and its services, the Government of Bangladesh has recently added the following modern equipment and facilities to the Library:

- a. Modern computer unit with CDS/ISIS software with server and terminal.
- b. One modern Microfilm Unit including Microfilm Reader Printer and Reader.
- c. One fax machine.
- d. One photocopy machine.
- e. One modern lift.

Website Bangladesh National Library has launched its Website on February 17, 2004. Our address is www.narchives-nlibrarybd.org

Future Plans

- a. To provide an Advisory Council for the National Library.
- b. To render the National Library a very modern international centre of learning by extending services and adopting new measures.
- c. To implement a new Library Act.
- d. To make it a separate national body with all necessary manpower and office structure.
- e. To provide training facilities for the professional personnel.
- f. To provide a full time director for the National Library.
- g. To enhance the user's facilities.
- h. To keep the National Library open up to 8 pm on all working days.

5 Conclusion

Our efforts would be to modernise and strengthen the Library with necessary resources not only to provide better services to the readers all over the world but also to meet the new challenges of the 21st century. Some useful information

1. Mailing address: Directorate of Archives and Libraries The National Library of Bangladesh 32, Justice S.M.Murshed Sarani Agargaon, Sher-e-Bangla Nagar Dhaka-1207, Bangladesh. Phone: 9129992, 9112733, 9138053 Tele- Fax: 9118704 e-mail: nab@accesstel.net Web site: www.narchives-nlibrarybd.org
2. Self-Identity at the main entrance of Library in writing is compulsory.
3. Library Timings: Saturday to Wednesday: 9 am. to 4 pm. Thursday: 9 am. to 2 pm. Friday and other government holidays closed.
4. Access: Reading rooms are open to all users. Regular users are advised to take Library Membership. The Library follows closed systems stacks.
5. Membership: Any citizen of Bangladesh subject to submission of the duly filled in prescribed form can have Membership at the fee of Taka 15. Application forms are available at all reading rooms counters or from Librarian. Reader's Identity Cards are issued after two working days of submission of the Form. Citizens of other countries may also use the library upon showing some necessary papers and recommendations from appropriate authorities.
6. Lending: Lending facilities are yet to be introduced except special cases for Libraries/Institutions and Government Offices.
7. Special bibliographies are compiled for potential research scholars on request.

The Role of the National Library in Bhutanese Society

C. T. Dorji*

In this paper, the author makes an attempt to present the scenario of the library in the Bhutanese context beginning with the collection of Buddhist literature exclusively for monastic use followed by the establishment of the National Library in 1967 still as a repository centre of Buddhist literature and housed in a castle-monastery (dzong). In the process, the author tries to highlight briefly the concept of the library, introduction and development, aims and objectives and library-related activities. It also covers the collection of Buddhist literature, other books, magazines and documents in Chhoekay, Dzongkha, English and other foreign languages.

1 Introduction

Druk-yul (land of thunder dragon), popularly known as Bhutan is a country nestled in the south-eastern Himalayan ranges bordered to the north by the Tibetan Autonomous Region of China, to the east, west and south by the Indian States of Sikkim, Arunachal Pradesh, Assam and West Bengal respectively. It is completely land-locked and cut off by the mighty mountains. The country remained a sealed book for many centuries known as the world's last Shangri-La which inevitably led to the development of distinct languages and dialects, traditional culture, religious practices and preservation of its ecology and natural environments. Bhutan was opened to the outside world only four decades ago with the construction of motorable roads and introduction of motor vehicles with the initiative taken by the third hereditary King of Bhutan, Druk Gyalpo Jigme Dorji Wangchuck (r. 1952-72).

Facts and figures of Bhutan are as follows:

1. Area (sq. kms.)	-	46,500
2. Districts (Dzongkhags)	-	20
3. Blocks (Geogs)	-	201

* Joint Director, National Museum of Bhutan, Bhutan

4. Population	-	6,38,000
5. Literacy rate	-	56 per cent
6. GDP	-	16,420
7. Forests and Agriculture		
i. Forests	-	72.5 per cent
ii. Pasture	-	3.9 per cent
iii. Agriculture	-	7.7 per cent
iv. Protected areas	-	26.23 per cent
v. Others	-	15.9 per cent
8. All roads	-	3376 kms
9. Tourists	-	6207

Buddhism has been the predominant religion since the 7th century or earlier and has inculcated deeply the value that all forms of sentient beings, not just human life, are precious and sacred. Since time immemorial, perhaps influenced by the special environment where communication with the divine was possible through contemplation and meditation, many great saints, mystics, ascetics, scholars, philosophers and pilgrims have been drawn irresistibly to these remote and rugged mountains of Bhutan in their personal search of wisdom, inspiration, solitude and happiness. The land and its people have been blessed with an invaluable spiritual and cultural legacy that has shaped every facet of Bhutanese life.

The Bhutanese have treasured their natural environment as it is seen as a source of all life and the abode of the gods and spirits. Every mountain, hill, valley, rock, lake and even tree are considered as the dwelling place of gods, demi-gods and spirits and are not disturbed. Given such a prevailing ethos which respects the natural environment, the Bhutanese have lived in harmony for many centuries with nature and that the nation has its environment still pristine and intact today.

2 Buddhist Literature

Buddhism generally consists of the Buddha (sngangs-rgyas), the Dharma (chhos) and the Sangha (dge-hdun) and the Bhutanese people revere them as the triratna (dkon-mchhog-gsum) being the precious three which are as follows:

1. Buddha-ratna (sangs-rgyas dkon-mchhog) is a fully enlightened being and one who has completely purified himself of all faults,

delusions, perfected all knowledge and wisdom. Conventionally represented by the images of the Buddha which is the first of the three jewels of refuge.

2. Dharma-ratna (chhos-dkon-mchhog) is the Buddha's doctrine which is the true cessation and path within the mental continuum of an Arya being. Conventionally represented by the teachings of the Buddha which is the second of the three jewels of refuge.
3. Sangha-ratna (dge-hdun dkon-mchhog) is the jewel of the holy community. Actually (the exalted being) Arya Bodhisattva and those on or above the path of seeing. Conventionally represented by the community of monks and nuns which is the third of the three jewels of refuge.

The most important Buddhist literature are the Tripitaka (bkah-brgyur) and the Commentarial Cannon (bstan-brgyur) which are two great encyclopaedia of philosophical and liturgical literary heritage of Buddhism in Bhutan. Known in Bhutanese as rgyal-bahi bkah-dang mkhas-pahi bstan-bchos which means commandment of the Buddha and commentaries by the great Buddhist scholars respectively.

The Buddha's teachings have been classified into three baskets, i.e. tripitaka (sde-snod-gsum) according to their subject matter and trainings they describe are:

- a. Vinayapitaka/hdul-bahi sde-snod/the basket of teachings on moral discipline
- b. Abhidharmapitaka/mngon-pahi sde-snod/the basket of teachings on aphorism, i.e. knowledge and wisdom
- c. Sutrapitaka/mdo-sdehi sde-snod/the basket of teachings in discourse

1. As a matter of fact, the Tripitaka (bkah-hgyur) is the commandment of the Buddha which was translated from Sanskrit into Choekay. Etymologically bkah means command and hgyur means translation. Generally, bkah-hgyur (tripitaka) consists of 100 volumes but the number varies according to different editions. The Tripitaka was compiled after one year of the parinivana of the Buddha at the first great council (bkah-bsdu dang-po) held at Rajagirha (gyus rgyal-pohi-khab) in 486 B.C. The compilation continued a century later at the second great council (bkah-bsdu gnyis-pa) held at Vaishali (grong-khyer yangs-pa-chan) and the third

great council (bkah-bsdu gsum-pa) after four centuries during the reign of King Ashoka: 234-237 B.C. (chhos-rgyal mya-ngan-med) at Pataliputra (grong-khyer ska-nar). According to Tibetan tradition, the Tripitaka collection comprises seven great divisions of 100 volumes which are as follows:

- | | | |
|--|---|------------|
| a. Vinaya/hdul-ba/discipline | - | 13 volumes |
| b. Sutra/mdo/discourses including
prajnaparamita/sher-phyin/
transcendental wisdom | - | 21 volumes |
| c. Buddha Vatan Sangha/phal-chhen/
The Buddha community | - | 6 volumes |
| d. Ratnakuta/dkon-brtsegs/
gems heaped up | - | 6 volumes |
| e. Sutnants/chhos-mngon-pa/
aphorism | - | 30 volumes |
| f. Nirvana/myang-hdas/
deliverance from pain | - | 2 volumes |
| g. Tantra/rgyud/mystical doctrine | - | 22 volumes |

On the whole, the Tripitaka (bkah-hgyur) is divided into sutra and tantra (mdo-dang-rgyud) which are the exoteric and esoteric teachings of the Buddha. The sutra (mdo) is the classification of teachings of the Buddha other than his tantric teachings which is the slower means of leading sentient beings to a higher state of rebirth and finally to the state of full enlightenment, whereas the tantra (rgyud) is the classification of the Buddha's teachings concerning the speedier method of attaining the Buddha-hood.

It is believed that the essence of the Buddha's teachings is that the vinaya (hdul-ba) is a cure for lust (hdod-chhags), the sutra (mdo-sde) is against hatred (zhe-sdang) and the abhidharma (mngon-pa) is against ignorance (gti-mug). Thus the three moral poisons arising in one's mind are subdued.

2. On the other hand, the Commentarial Canon (bstan-hgyur) is the collection of Chhoekay translations of the early commentaries to the Buddha's teachings by Indian masters on the following three divisions which runs into 225 volumes with slight variations between different editions:

- a. Hymn of praises (bstod-tshogs)

- b. Sutra (mdo), exoteric teachings of the Buddha
- c. Tantra (rgyud), esoteric teachings of the Buddha

In addition, there are grammar, literature and expository texts (rig-gzhung-skor) which includes the Ten Sciences (rig-pahi gnas-bchu/dasa vidyasthana) and the Thirteen Great Expository Texts (gzhung-chhen bchu-gsum).

3. The Ten Sciences (rig-pahi gnas-bchu/dasa vidyasthana) are divided into five minor sciences and five major sciences.

A. The Five Minor Sciences (rig-gnas chhung-ba Inga-ni/ pancalapavidhyasthana) :

- a. Poetry (snyan-ngag/kaavya)
- b. Semantics (mngon-brjod/abhidhana)
- c. Lexicography (sdeb-sbyor/chandas or samgranthana)
- d.. Astrology (kar-rtsis/ganana)
- e. Dance and drama (zlos-gar/nataka)

B. The Five Major Sciences (rig-gnas chhe-ba Inga-ni/ pancamahavidhyasthana):

- a. Grammar (sgra-rig-pa/sabdavidya)
- b. Medicine (gso-ba rig-pa/cikitsa)
- c. Painting and handicrafts (bzo-rig-pa/silpa)
- d. Logic (gtan-tshig rig-pa/adhyatma) which includes the thirteen great expository texts.

4. The Thirteen Great Expository Texts (gzhung-chhen bchu-gsum) are as follows:

- a. Pratimoksa sutra (so-sor thar-pahi-mdo) by Buddha (sangs-rgyas bchom-ldan-hdas)
- b. Vinaya sutra (hdul-ba mdo-rtsa-ba) by Gunaprabha (yon-tan-yod)
- c. Abhidharmasamuccaya (mngon-pa kun-btus) by Asanga (thogs-med)
- d. Abhidharmakosa (mngon-pa-mdzod) by Vasubhandu (dbyig-gnyen)

- e. Prajnanamulamadhyamak (dbu-ma rtsa-ba shes-rab) by Nagarjuna (klu-sgrub)
- f. Madhyamikavatara (dbu-ma hjug-pa) by Chandrakirti (zla-ba grags-pa)
- g. Catuhasataka (bzhi-brgya-pa) by Aryadeva (hphags-pa-lha)
- h. Bodhicaryavatara (spyod-hjog) by Shantideva (zhi-ba-lha)
- i. Mahayanasutralamkara (mdo-sde-rgyan) by Asanga (thogs-med)
- j. Prajnaparamita Abhisamayalamkara (sher-phyin mngon-rtog-rgyan /Perfection of knowledge and wisdom by Asanga (thogs-med)
- k. Madhyantavibhanga (dbu-mthah rnam-hbyed) by Asanga (thogs-med)
- l. Dharmadharmatavibhanga (chhos-nyid rnam-hbyed) by Asanga (thogs-med)
- m. Uttaratantara (rgyud-bla-ma) by Asanga (thogs-med)

3 Concept of Library

The word “library” means collection of books for reading or borrowing, e.g. public library, reference library, university library, personal library, etc. More appropriately, the word “library” means a building in which these books are safely kept or stored.

The genesis of the library movement in Bhutan can be traced back to the establishment of monasteries and temples beginning with the construction of Paro Kyichhu Lhakhang and Bumthang Jampa Lhakhang in Bhutan in the 7th century AD by the 33rd Buddhist King of Tibet, Chhogyal Srongtsan Gampo. Thereafter many monasteries and dzongs (castle-monastery) were constructed in the country by Buddhist masters of different traditions of Mahayana Buddhism. These monasteries, dzongs and temples served as libraries in Bhutan because all sacred Buddhist literature was stored and preserved in them for worship and study.

In the Bhutanese context, the Buddhist literature virtually represents the speech of the Buddha (sung-ten) as statue and stupa represent the Buddha's body and mind respectively. Therefore, the Bhutanese people revere and worship the Buddhist literature.

Since the early concept of the library was a temple, where rare and invaluable Buddhist literature was stored and preserved for worship and study, a Bhutanese word for library was coined when the National Library was established in 1967. Two Bhutanese words were joined together “Pay” (dpe) meaning book and “Zyo” (mdzod) meaning treasure house. The Bhutanese word “Pay-zyo” means the treasure house of books. Thus, “Gyalyong Pay-gzyo” means the National Library.

4 Introduction and Development of Library

The modernisation and socio-economic development were introduced in Bhutan in the early 1960s on the initiative taken by His Majesty, Druk Gyalpo Jigme Dorji Wangchuck, the third hereditary monarch of Bhutan (r. 1952-1972). The Royal Government established many institutions for preservation and promotion of the country’s age-old cultural and religious heritage and the National Library established in 1967 is one of these important institutions. When the National Library was first established as the brain-child of Her Royal Grandmother Ashi Phuntsho Choden, Queen of His Majesty King Jigme Wangchuck, the second hereditary monarch of Bhutan (r. 1926-1972), it was opened with a modest collection of 140 volumes of Buddhist literature in Chhoekay (classical language) at the central tower (utse) of Tashichhodzong, Thimphu. Ven. Geshey Tshewang was appointed as the first Director of the National Library who was succeeded by Ven. Mynak R. Tulku as the second Director. As the National Library had no building of its own, it moved from one place to another under the administrative control of the Ministry of Finance and Ministry of Home Affairs until 1972. At the end of 1973, The National Library was shifted to Changangkha at Thimphu under the Ministry of Social Services. It developed extensively between 1976 and 1985 as a number of publications of old and rare religious texts were undertaken in India in collaboration with the US Library of Congress, New Delhi during the tenure of the third Director, Ven. Lopon Pemala.

In course of time, the National Library’s collections increased considerably and an inevitable need was felt to have its own permanent building. Realising this need and also the sanctity of religious texts, the then Home Minister, H. E. Lyonpo Tamzhing Jagar took the initiative to construct the present four-storeyed building designed in the style of a temple (lhakhang). Upon its completion, the National Library was finally shifted to the present building in 1984 and placed under the administrative control of the National Commission for Cultural Affairs.

The Library is an important institution of public education. We normally think of lectures in the classroom whenever we talk of education. It is however, clear that the lectures in the classroom cannot make the students understand the past glory but in a library, history is revealed before them in the form of books.

The National Library has over 14,500 volumes of religious texts in Chhoekay, foreign titles in English and other foreign languages:

A. Chhoekay Collections

There are over 10,000 volumes of religious texts in Chhoekay on various subjects which are fundamental sources of philosophy, history, religion, mythology, paintings, astrology, culture, etc. In 1997, all these texts were classified on the basis of four major traditions of Mahayana Buddhism (Nyingma, Sakya, Kagyu and Gelug) and Bon religion in order to make more convenient for readers to look up the required titles. The National Library has the following specific Chhoekay collections in its possession which were acquired since its inception:

1. The Tripitaka (bkah-brgyur)

- a. Degay Tshelpar edition (sde-dge tshal-par) - 100 volumes
- b. Narthang edition (snar-thang) - 106 volumes
- c. Lhasa edition (lha-sa) - 100 volumes
- d. Urga edition (ur-ga) - 105 volumes
- e. Dharthang edition (dar-thang) - 36 volumes
- f. Japan edition (jah-pahn) - 45 volumes

2. The Commentarial Cannon (bstan-brgyur)

- a. Degay Tshelpar edition (sde-dge) - 100 volumes
- b. Narthang edition (snar-thang) - 106 volumes
- c. Dharthang edition (dar-thang) - 56 volumes
- d. Japan edition (jah-pahn) - 105 volumes

3. Bon Kangyur (bkah-brgyur) and Tengyur (bstan-brgyur)

The National Library acquired a complete set of the Bon Kangyur and Tengyur, published by Mirig Petrun Khang, China. So far, there is no historical record on the existence of the Bon Kangyur and Tengyur in

Bhutan. As such, this collection of 514 (178 volumes of Kangyur and 336 volumes of Tengyur) is the first Bon Kangyur and Tengyur in Bhutan.

4. Scriptures Written in Gold Letters

- | | |
|-------------------------------------|-------------|
| a. Gaytongpa | - 5 volumes |
| b. Bum Kapa | - 1 volume |
| c. Phagpa Do-Duepa | - 1 volume |
| d. Sangye Tshen-bum | - 1 volume |
| e. Togpa Rinpoche
Chhoekeyi Zung | - 1 volume |
| f. Togjyod | - 1 volume |

5. Foreign Collections

There are over 4,500 English titles mainly on Buddhism, Bhutan and neighbouring countries. In addition, there are many periodicals, magazines and news bulletins. It has 40 volumes of Pali Tripitaka in Burmese script and 50 volumes of Pali Tripitaka in Devanagari script. The National Library recently received 142 books on different subjects as donations from the Japan Foundation and from Taiwan and Germany.

5 Aims and Objectives of the National Library

The National Library has the following aims and objectives:

1. To collect the entire written heritage of the country for research and to educate future generations to learn and understand the rich written literature of the kingdom.
2. Preserve and transform the traditional knowledge of writing on hand-made papers and carvings on wood-blocks into digital media for permanent storage and their wider distribution through IT technology.
3. To publish as many rare books as possible for wider circulation and translate selected titles into English not only for the younger generation to read and learn about the past history of the kingdom but also for readers throughout the world to share the rich Bhutanese cultural heritage.

6 Research and Publications

The new concept of library as an educational institution has been further strengthened and developed worldwide by increase in research and translation activities. In line with this concept, the National Library

undertook translation of many important religious and biographical literary works of Bhutan. So far, it published the following titles which are expected to help the students, teachers, readers and research scholars:

- a. Ngondroj Thri (Preliminary Practices) in bilingual editions
- b. Phagpa Gyalwachen (Dharani) in bilingual editions
- c. Zungbul Laglen in Dzongkha
- d. Zung for Punakha Dzong
- e. Kunkhyen Kabum from wood blocks on Bhutanese paper
- f. A Treasure of Songs of Bhutan
- g. Driglam Namzhag (Bhutanese etiquette) in bilingual editions
- h. Driglam Namzhag Norbui Threngwa, researched and compiled by Gyalzim Dasho Dorji Gyaltshen

7 Library-Related Activities

1. Research on Holy Places in Bhutan

The National Library felt an immediate need to conduct research on holy places in Bhutan. There are many places of Buddhist pilgrimage and ancient dzongs, monasteries, temples, stupas and rock-caves in the country. A thorough research on these sites will not only record the importance of the places but it will also reveal unrecorded legends and histories which will be very useful for future reference.

2. Scriptural Documentation Survey

In order to enhance the collections and preserve important and rare documents of the country, a beginning has been made by the National Library to register manuscripts owned by monasteries and landlords. The scriptural documentation survey team will visit the monasteries, temples and private houses and store documents in the digital camera at the site and download them at the head office for their record. Based on the record of the collection, the National Library will prepare a comprehensive catalogue which will be a starting point for the development and publication of a national bibliography.

3. Archives

The National Library took the initiative to construct an Archive building which will be very useful to store the rare and valuable documents for future references.

4. Legal Deposit

The 77th session of the National Assembly passed the Legal Deposit Act under which the publishers of government, corporations and international agencies would be obliged to deposit 10 printed and 4 non-printed documents, whereas private publishers would be obliged to deposit 5 printed and 2 non-printed documents to the National Library. This is expected to help the National Library to develop collections and prepare for the compilation of a comprehensive catalogue to guide the readers.

5. Book Stall

In order to generate funds for purchase of books for the library, the National Library has started a small book stall in Thimphu town. It sells books in Chhoekay printed by the National Library as well as other agencies at a lower rate as compared to other book stalls in Thimphu.

6. Development of Dzongkha Fonts

The National Library developed Dzongkha fonts for the computer. The cursive-writing of Gelong Rinchen was chosen as the most representative Gyuryig (cursive letters) alphabet, whereas the handwriting of Pem Tshewang was chosen as Uchhen (capital) alphabet to be used as the normative computer font for IBM PC only.

7. Chhoekay Computerisation

The National Library set up a databank entry mask in different fields to computerise library holdings. Chhoekay texts usually contain a number of subtitles on different subjects depending upon texts. All these subtitles along with the main titles have been fed into the databank on the WINISIS programme of UNESCO. The search for a specific text can be made through the computer by author, title and master file number at the counter. The program, upon its successful completion, would be shared with other institutions within the country with export and import facility of data to help users. A total of 27,000 subtitles have been computerised.

8. Computerisation of Foreign Collections

The National Library computerises foreign collections on a different data spreadsheet. Out of 4,500 books, 270 titles have already been computerised whereby the readers can search titles by author, subject and keywords. There is a proposal to keep two computers - one for Chhoekay and another for Foreign Collections will be kept at the disposal of the readers at the counter to facilitate the readers to browse and find the required titles of their interest.

9. Wood Block Carving and Printing

The National Library made an attempt to revive the ancient tradition of wood block carving and printing. Out of 9246 numbers of wood blocks in the possession of the National Library, the following titles have already been carved:

- a. Kunkhyen Kabum
- b. Yonten Thaye Sungbum
- c. Ngawang Gyaltshen Sungbum
- d. Jamyang Gyeltshen Namthar
- e. Padma Thangyig
- f. Kunzang Lamai Zhelung
- g. Thoedrol Duepa
- h. Zhabdrung Soldeb
- i. Jamyang Dazai Zhabten
- j. Lama Ngachui Zung
- k. Thugje Chhenpoi Damngag
- l. Thugje Chhenpoi Darchhog Phenyon
- m. Zungchhen Deng-nga Duepai Zung
- n. Vajra Guru Zung
- o. Desheg Chhiyi Zung
- p. Chhagdor Zung
- q. Yulkhor Zung
- r. Dudtrag Zung
- s. Dudkhi Nushom Zung
- t. Digshag Sergyi Pudri
- u. Kangyur Rochog
- v. Zangchod Monlam
- w. Mani and Vajra Guru Ngensong Jangwa
- x. Kewo Lugkyi Tenchyo
- y. Zhithro Tagdrol
- z. Mithrug Gyadrol

10. Fumigation

The National Library has introduced scientific treatment of wood blocks in the fumigation machine. So far, 9246 wood blocks have been treated from time to time and then stored in air tight boxes and stacked in the sandalwood shelves to prolong the lives of wood blocks.

11. Metal Block Printing

The National Library has established a small printing unit at Changangkha in Thimphu which has 6593 numbers of metal blocks. Besides storing books and metal blocks, the printing unit, with an old treadle machine, printed Zung scripts for Punakha Dzong.

12. Microfilm

The National Library put special emphasis on preservation of rare and important documents. So far, a total number of 1250 titles of rare documents have been stored in the microfilm which will become a very valuable source of reference in the near future.

13. Training and Workshop

The National Library conducted a number of training programmes and workshops on relevant subjects within the country which were attended by many participants from other similar institutions in Bhutan. At the same time, many such training programmes and workshops outside the country were attended by the Director and other officials of the National Library.

14. Preparation of Catalogue and Inventory of the Library Holdings

The National Library started the preparation of catalogue and inventory of the library holdings on a priority basis.

8 Conclusion

The concept of library has been changed from that of a temple containing sacred Buddhist literature for worship to an educational institution of cultural heritage, history, arts, science, design, etc. In accordance with the new concept of library as an educational institution, the National Library introduced "Reader Services" as a modest beginning to attract the visitors, students, teachers and research scholars from different parts of the country. Under the reader services, the general readers could use the reading facilities in the library hall and they were also permitted to take books and periodicals on loan. The management is presently engaged in the work of cataloguing and classification and once it is completed then membership will be opened to all readers with nominal fees. The National Library has become quite popular especially after introducing the reader services as the number of visitors kept increasing steadily year by year. The visitors record showed a total number of 2259 visitors between May and December 2000. Besides this, there were official delegations including senior dignitaries and ambassadors of other countries.

The Library as an educational institution plays a vital role not only for the students and teachers but also for public education. The lectures in the classroom cannot make the students understand whereas in a library, reference books are readily and easily available. It is easily comprehended and retained in the minds when something is learnt by reading rather than listening to the classroom lectures. The young minds should be saturated with what has been born in a human world which is in harmony with the world around it.

Finally, it may not be out of place to mention here that the control of mind-degradation of cultural value is very important to appreciate the value of cultural heritage. Mind-degradation study is as important as that of biodeterioration study. There is an inevitable need to begin study on mind-degradation of cultural value for the benefit of the younger generation. Ideas embedded in the minds of young children will have a greater impact on their lives and make permanent impression on their lives. Therefore, we must inculcate moral lessons and reading habits in the minds of young students for appreciation of cultural value preserved and conserved by our forefathers. One effective way of realising this goal is to recognise the importance of the library and the students should visit the libraries to learn the real world experience in order to produce good citizens.

Tashi Delek!

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A New Strategic Direction for the National Library of Australia

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The National Library is halfway through implementing its strategic *Directions for 2003-2005*. This public statement of the Library's aims clearly focuses on developing new services and redeveloping existing services to create an environment where users are easily able to achieve two very basic things: to find the information resource that satisfies their research query and having found it, to get that resource. To support these aims, the Library is implementing new services that connect the user directly with online content or in the case of physical collections, with online discovery and delivery options. Collaboration with other Australian collecting institutions is also a priority in the development of new services that bring together information resources from across the nation in a virtual national collection.

1 Introduction

The National Library of Australia, in its key public statement of aims and objectives, *Directions for 2003-2005*, espouses the simple philosophy of making it easy for users to find and to get information resources. This is reflected in the redesign and redevelopment of the Library's Website and the services offered via the Website.

In developing new services, the National Library is able to build on the strong record of collaboration and resource sharing amongst libraries and other collecting institutions in Australia to provide users with one-stop access to information resources at a national level.

2 Background

The National Library of Australia was formally created in 1960 with the passing of the National Library Act. The Library, however, traces its national functions back to 1901 when the parliament of the newly formed Commonwealth of Australia invested the Commonwealth Parliamentary Library with responsibility for developing a national collection of Australian

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publications. The *National Library Act 1960* confirms the Library's collecting and preservation role, as well as defining its responsibility to provide access to its collections and information resources and leadership to the Australian library community. The Library is first and foremost a major research library and centre of scholarship, and its new directions are underpinned by the Library's strength in the area of its traditional library functions of collection building, preservation, description and access. The new directions are an extension of this role.

While its location in the capital of Australia, Canberra, with its small population of 350,000 has not affected collecting or leadership activities, the Library has been limited over the years in the delivery of its services nationally across a vast continent with a widely scattered population. The World Wide Web and other developments in Internet technology have provided the Library with a mechanism for successfully overcoming the barrier of distance for the first time. This has been assisted by the fact that Australians have been rapid adopters of the Internet. In 2002, 46 per cent of Australian households and 72 per cent of businesses had a personal computer with Internet access. Australians have embraced the Internet as an information resource and expect to find the information they need online.

In developing and expanding its services, the Library has taken several key environmental and behavioural factors into account:

- Users will increasingly seek information online and they will not care who holds this information
- Users will want fast and easy access to information regardless of its source
- Users will increasingly want to satisfy their information needs without mediation by librarians
- Search engines will provide more efficient search capabilities, creating user expectations that information resources should be able to be located with minimum effort
- Users will not persevere in their efforts to locate information in libraries if the task is too difficult in comparison to 'googling' on the Internet

3 Redevelopment of the National Library of Australia's Website

The Library has operated a Website since 1995. Over time the site has changed from a place to find information about the Library into a primary

means of online service delivery. The results of a user evaluation of the Website in 2001 were instrumental in influencing the Library to rethink its service delivery policies and to develop its services to enable the easy 'finding and getting' of information resources. Key findings of the evaluation included the fact that users did not understand the distinction between the Website and the catalogue when searching for information. They were also confused by many services whose names did not reveal what the service was offering. And when users did locate information about relevant resources, they often found themselves at a dead end with no understanding of where to go to actually get the resource.

The opportunity to address the issues raised through the evaluation came in 2002 when the Library commenced a project to replace its integrated library management system and at the same time to redevelop its Website. <http://www.nla.gov.au>

A new information architecture has been developed for the Website that organises content into seven sections: *Find*, *For*, *Help*, *About Us*, *Visit Us*, *News & Events* and *Shop*. A new graphic design and a range of navigation aids that provide a context for each page support this. Experienced users can go straight to known services that provide access to the collections such as the catalogue, collection guides and indexes and databases. For users who are uncertain where to begin, or who want to access specific collections, a set of *Find* pages lead into the catalogue through a simple search box. The *Find* pages also provide access to material available online or from other collections. The terminology used – such as *Find Books*, *Find Pictures* – has proven to be very effective according to usability testing conducted by the Library as part of the implementation of the new Website.

The revitalised Website is a key part of the Library's new user-centred service model. An important feature is the new 'One Search' option which allows users to search across the catalogue, all the Web information pages (including directories, finding aids, guides and the Library's Online Shop) and the other resource discovery services provided via the Website. The aim is to simplify the Website to the point where the user does not require specialised knowledge to search and make choices.

In order to support the 'getting' of information resources once the user has located an item in the Library's collection, there are choices within the catalogue entry for both onsite and offsite users. An electronic call slip facility allows users to request a copy of an item from the Library's closed stacks for use in a reading room. This can be done onsite or from the user's home, place of work or study.

For users who cannot visit the Library in Canberra, there is a new *Copies Direct* service. *Copies Direct* is an example of the importance given by the Library to making its collections and services available nationally. It provides a single entry point for users to request a copy of any item in the Library's collection, subject to copyright legislation. A simple Web-based form is used to request copies of journal articles, chapters of books or in some cases whole books, pictures, maps, manuscripts, sheet music and oral history transcripts and tapes. The user is charged the Australian standard inter-library loan fee and has a choice of delivery mechanisms—electronically via E-mail or CD, by fax or by mail.

The electronic call slip facility and the *Copies Direct* service ensure that the user has the option to get the item they need.

4 Development of Digital Collections

One of the most important aspects of the Library's move towards providing users with simple, direct and unmediated access to information is the provision of information resources in digital form. In particular the Library is focusing on the creation of digital content through its digitisation program, the collecting of Australian publications in digital form and the purchase of online journal datasets.

Underpinning the digital collections is a unique architecture for the management, discovery and delivery of digital materials. The Library has put considerable effort into developing and/or purchasing software that will facilitate discovery of and access to digital content by users. The main elements of the architecture are:

A Digital Object Storage System (<http://www.nla.gov.au/dsp/doss>)

A Digital Archiving System to gather and manage archival copies of selected born digital Australian publications (<http://pandora.nla.gov.au/manual/pandas/index.html>)

A Digital Collections Manager database that records technical and management information about digital collection items <http://www.nla.gov.au/dsp#doss>

A Metadata Repository and Search System which supports searching and resource discovery (<http://www.nla.gov.au/pressrel/2002/teratext.html>)

A Persistent Identifier Resolver Service which allows digital collection objects to be accessed via the Web regardless of changes in their Web location (<http://www.nla.gov.au/initiatives/persistence.html>)

A series of *Delivery Systems* to enhance access to digitised versions of collection items <http://www.nla.gov.au/dsp#doss>

The Library's digitisation program is an important aspect of its goal to make its Australian collection accessible nationally. Digitisation commenced in 1995 when the Library began routinely seeking permission to create digital versions of all pictures acquired for the collection. In July 2001 the digitisation program was expanded to include selected manuscripts, maps, books and sheet music. Other formats, such as newspapers, are currently under consideration. Items selected for digitisation are usually those that cannot be lent to users outside Canberra on inter-library loan, are significant historically or culturally or support the Library's collaborative digital services. Items digitised in the past year include the manuscript papers of early prime ministers, rare maps depicting early exploration of Australia and early 20th century photographs of Australians in the Antarctic.

Users can find digital versions of items in the Library's collections either through a search of the Website or catalogue, or a direct search of a collaborative digital image service such as *PictureAustralia* or a portal like *AustraliaDancing*. The Library has undertaken major work on developing delivery systems so that users can access the digitised versions of items with the same ease as if they were using the physical item itself. Each format has its own delivery system featuring navigation aids such as page turning, zooming and panning.

Collecting Australian publications is a major function for the Library and the collection of digital publications commenced in 1996. The Library has developed policies and procedures to ensure as far as possible that a representative selection of publications is available for current access and long-term future access through the *PANDORA* Archive. While much of what is collected is free and can be made available nationally, the Library negotiates with owners of publications that are fee-based to ensure that, as far as possible, back issues or older works can be made available free, from an agreed date, to all Australians. The Library has also worked hard to secure collaborative collecting agreements with the seven state and territory libraries and other national collecting institutions that have similar collecting and preservation responsibilities.

Public access to the increasing number of Commonwealth Government publications in digital form is a priority for the Library. A project is in progress to encourage government departments and agencies to create suitable metadata for their digital publications and to inform the Library of new publications so that these can be archived in a timely manner.

The National Library and each of its partners selects publications for archiving based on agreed selection guidelines. (<http://www.pandora.nla.gov.au/selectionguidelines.html>) A set of principles aimed at promoting the 'finding and getting' of these publications is observed including:

- Each item selected is fully catalogued and forms part of the national bibliography
- Permission is sought from the publisher/owner to ensure that as far as possible there is free public access to the item
- Each item is quality assessed to ensure it is functional to the fullest extent (for example all multimedia features work; internal links retain their integrity)
- Sufficient information about the properties of the publication are recorded so that in the future long-term preservation strategies can be put in place

Each partner uses the *PANDORA* Digital Archiving System (PANDAS) developed by the Library to register selected publications, record management metadata, schedule for archiving and process and display them to the public. Archived titles are stored centrally on the Library's server. In December 2003 the *PANDORA* Archive contained 5,160 titles with 17.7 million files occupying 554 gigabytes of storage.

In addition to the creation and collection of digital materials the Library also purchases several large datasets of online journals for use in its reading rooms. While offsite access is not possible due to license restrictions, the Library ensures that it is able to supply copies from the online journals through its inter-lending service either directly to individuals or to other libraries, in accordance with the fair dealing provisions of the Australian copyright act. The Library has developed a set of principles that underpins its negotiations with vendors when purchasing online journals.

5 Collaboration for National Resource Sharing and Delivery of Information Resources to Users

There is a strong emphasis on collaboration in the Library's strategic directions statement and this reflects the significance placed by the Library on working with other collecting institutions to facilitate the finding and obtaining of information at the national level. Working collaboratively not only ensures that Australians have the best possible access to the nation's information resources, but allows the participating institutions to share

expertise and costs. The Australian library sector has a long and successful history of collaboration and resource sharing.

At the core of this activity is the Australian National Bibliographic Database which acts as a union catalogue of the holdings of most Australian libraries. It has 11 million records and over 33 million holdings statements and forms the core of the national inter-lending system. Over the top of this, providing a search, copy cataloguing and document supply service is the *Kinetica* service run by the Library. In addition to the National Bibliographic Database, *Kinetica* provides access to other union catalogues and services provided overseas including the Te Puna service from the National Library of New Zealand, the Singapore National Union Catalogue and the Research Libraries Group and OCLC catalogues.

Kinetica supports a high level of access to information resources in libraries with over 6 million searches and 250,000 inter-library loans per year. The service has traditionally been used by librarians on behalf of clients and its current user interfaces are not considered user-friendly. The Library recognises that *Kinetica* is a major research resource and is seeking ways to expand access to the service by individual users in addition to library staff. An opportunity exists within the current phase of redevelopment of the *Kinetica* service which commenced in January 2004. The Library will include a simple search interface in its redevelopment of the service and although *Kinetica* will retain a core of charges to customer libraries to support the maintenance of the service, the Library will strive to provide free search access to the National Bibliographic Database.

The Library is also working closely with other collecting institutions outside the library sector in order to develop resource discovery services based on digital content being created and collected nationally. An example of this is the *PictureAustralia* service which was developed by the Library in collaboration with the State Library of New South Wales in 2001. The decision to develop *PictureAustralia* as a cross-sectoral service reflects the Library's philosophy that the service should enable users to locate all digitised images of Australian life and culture, regardless of which institution has created or owns the images, through a single, simple search interface. Users searching *PictureAustralia* often find relevant images held by institutions that they would not normally associate the subject with – for example a search on rainforests reveals images held by nine participants, ranging from small public libraries to large universities and a major research organisation. There are now 1 million images belonging to 30 galleries,

archives, museums and libraries that can be accessed through the service, which receives an average of 45,000 searches each month.

Following the success of the *PictureAustralia* model, the Library has embarked on the development of *MusicAustralia*. While *MusicAustralia* emulates the concept of a simple, single search interface to sheet music and recorded sound, the Library is dealing with far greater challenges and complexities in developing a service that allows users to interact with the resources that they find. In its first phase the service will offer access to the digitised sheet music and digitised sound recordings and original digital compositions held by the Library, ScreenSound (the National Film and Sound Archive) and several other participating institutions.

The Library is a member of the Council of Australian State Libraries and works closely with the state and territory libraries in order to share expertise and implement new services that could not easily be achieved by a single library working on its own. The virtual reference service, *AskNow: online answers Australia-wide*, which has just completed its first year of operation, is an example of this. Staff from the participating libraries are rostered to assist users in searching for information resources on the Internet, at the same time teaching them Internet search skills. The service operates ten hours a day Monday to Friday, taking advantage of the different time zones across Australia. *AskNow* has just been evaluated and results show that the service is meeting the needs of a broad range of users. Challenges for the future development of the service include managing the increasing number of uses by school age children and ensuring that rural and regional users remain adequately represented. In the first year of operation *AskNow* received over 40,000 enquiries, with 30 per cent coming from Australians living outside the city areas. This roughly parallels the population distribution between city and rural areas in Australia.

Another service, *InformationAustralia*, is directed specifically at public library users, but could equally be tailored for other user groups. It is a portal for use in public libraries to make searching for information resources in print and electronic forms a simple one step activity. Five public libraries representing large and small and rural and urban areas are assisting the Library with the development and trial of the portal.

The overall objectives of the portal project are to:

- Evaluate the need for access to Australian online and print resources by public library users

- Develop a model for improved access for public library users to Australian print and online resources
- Develop a business model to support this that includes access through inter-library loan to the Library's own collection

5 Conclusion

A recent external evaluation of the Library's onsite reference and collection delivery services assessed the impact on users of the recent changes very positively. The evaluation confirmed that the development of online collections and services has been warmly welcomed by users and has enabled them to feel more independent and in control of their research activities:

"Overall, three major factors have affected user behaviour over the past few years: the introduction of the E-call slip system, the technological upgrades and the increase in databases and online indexes. Together these have contributed to an increased sense of independence, an enhanced sense of achievement and a feeling of being in control of one's research options."

[Evaluation of the National Library of Australia's On-Site Reference Services and Collection Delivery, Leapfrog Research, June 2003 p. 22.]

Changes in user behaviour have also been noticed through monitoring of the Library's key performance measures in its Balanced Scorecard reporting system. The use of services online via the Website and the use of content in digital form continues to escalate, with a 150 per cent increase in the use of online services and information resources over the past year.

The importance of the National Library's role in delivering innovative services to all Australians and providing leadership through collaboration across the library sector was acknowledged in a recent report on an inquiry held by the Australian parliament into the role of libraries in the online environment². The report recognised the importance of a national approach to the delivery of online services and the Library's key role within this.

While much remains to be done, the National Library is making significant progress towards achieving its new strategic direction based on the provision of services that are designed to facilitate and enhance the process of 'finding and getting' information resources.

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The Legislative Provision of Kazakhstani Librarianship

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1 Introduction

The library space of Kazakhstan is represented by libraries of different types and kinds which serve the population at the place of residence, study, work, medical treatment, leisure (recreation) and in other places. Legislation includes separate articles in the codes, laws, decrees of the President of the country, and also the normative legal acts of the Government of the Republic, the profile Ministry of Culture and other Ministries. The basis of legal provision of librarianship is the Constitution (adopted August 30, 1995), the Civic, Crown law and Administrative codes. The norms of direct action, including the obligatory legal deposit of documents, copying of author's editions are in the laws on culture, on the press and other mass media, on copyright and other related rights. Separate norms, relating, for instance, to information, the creation in the libraries of scientific-research departments, the preservation of collections can be found in the normative-legal acts of related legislation. From among them one can stress the laws on information, on science, protection and use of historical-cultural heritage. Besides the national legislation there are in force documents of international law, whose participant is the republic. They include the Agreement on importation of materials of educational, scientific and cultural character dated June 17, 1950 and the protocol to it dated November 26, 1976 (UNESCO), known as the "Florentine". The interantional technical cooperation of Kazakhstani libraries and the CIS countries is regulated by the interstate "SIBID" standards by the intergovernmental Agreement "On the carrying out of agreed policy in the sphere of standardisation, metrology and certification (1992)".

2 The Library Space of Kazakhstan

The biggest number of libraries which is 7914 belongs to the Ministry of Education and Science. From among them there are 7397 (93 per cent)

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that are school libraries, i.e. an absolute majority. The remaining 7 per cent include 48 libraries in higher education establishments, 175 belong to the secondary special education, 258 - to the vocational-technical education and liceums, 17 - to the qualification upgrading institutes. Here also enter the big libraries of the republican status which are the Scientific-pedagogical library, the Scientific-technical with affiliates in the regional centres of the republic, the Central Library of the Academy of Sciences. The former heads the centralised library system that unites 20 libraries. There by the Decree of the Governemnt of Kazakhstan has been formed "The Otrar Library" Scientific Centre in the Eurasian L. Gumilev State University in the capital of the Republic, Astana city.

Servicing by place of residence is carried out by 3,304 libraries of the Ministry of Culture of the Republic Kazakhstan. The Ministry of Culture has more than 6,000 departmental organisations. From among them libraries constitute 50 per cent and they are marked by the biggest number of network units as well as the number of workers and volume of services rendered, especially in the rural areas. The rest of the establishments and organisations less than 50 per cent pertain to the 14 branches in the sphere of culture and art (museums, theatres, clubs, etc.). The library network unites 4 republican libraries: the National, two state - children's and youth's libraries, the Republican library for the blind and poorly sighted citizens. There in the regional centres are 31 regional libraries, including 15 universal scientific, two universal libraries united with the children's and youth's libraries, 5 children's, 4 youth's, 5 children's and youth's; 16 regional and city libraries for the blind and poorly sighted citizens. There is coming to an end the construction of the new National Library in the youngest capital in the world - the capital of Kazakhstan Astana-city. A considerable part of the state libraries' network constitute the rural libraries - 2957 or almost 90 per cent. Mainly these are affiliates, for grown-ups and children and which enter the 167 centralised library system.

Among the branch libraries one can mention 28 agricultural, 64 medical and 40 road construction libraries.

Altogether as of January 1, 2002 the number of the above-mentioned libraries constitutes 11.350 units. The joint collection of documents includes 296043,2 thousands of registration units. The general volume of documents' hand-out is 198 623,0 thousand. The number of readers is 8434,8 thousand people.

3 The Legal Basis for the Placement, Creation and Functioning of the Libraries

The legal basis for the state management of libraries in such a fundamental issue like the territorial division lies in the Constitution.

By the Order of the Minister of Culture N 118 dated May 18, 2002 the Rules were approved on the activity of library establishments of the Republic of Kazakhstan.

The above-mentioned Rules on the activity of library establishments of the Ministry of Culture determine the normatives when a library can be established but do not obligate to do so. Now there is a discussion going on in the Parliament on the necessity of library legislation which must defend the democratic values of independent Kazakhstan in the part when citizens can implement their rights for free search and reception of information, to use establishments of culture and have access to cultural values (1).

The libraries of educational establishments are created as their obligatory divisions. By the Decree of the Government of the Republic of Kazakhstan N 596 dated April 18, 2000 a legal act was approved in addition to the law "On education" named the Rules of educational activity licensing.

The legal basis for the management of a separate library as juridical person is the Civic code of the Republic of Kazakhstan. According to it there in the republic is created the multiplicity of libraries by forms of ownership with all the subsequent peculiarities thereof in economic activity.

The functioning and prospects of development of libraries are regulated by the branch law "On Culture" dated December 24, 1996. Article 23 of the Law is called "Librarianship" and defines it as a branch of culture, the main activity of which is the informational, educational, cultural-enlightening.

Of importance is Article 26 of the Law that defines rare manuscripts, autographs, documents, collections of letters, books, printed editions and their collections and denotes them as cultural values.

The laws on culture, on information give the right to the libraries to use high-technologies for the formation of their own automated library resources and provision to them of a remote access, and also digital interaction with the libraries of the world.

The libraries of Kazakhstan, including the National, do not have the status of scientific-research establishments. At the same time the libraries carry out scientific-research work on the problems of library study, bibliography and book study. Article 10 of the Law on Science dated July 9, 2001 allows juridical persons, for whom scientific activity is not the main subject of activity, to create within their structure scientific divisions to carry out scientific activity for the solution of tasks, denoted in their founding documents.

The delivery of charge-free legal deposit of printed matter is subject to Article 19 of the law of the Kazak SSR "On the Press and Other Mass-Media" dated June 28, 1991 and that is still valid in the Republic Kazakhstan and the decree of the Cabinet of Ministers of the Republic of Kazakhstan N 548 dated June 22, 1992 "On the order of sending of control and legal copies of printed matter". There is a relevant Article N23 of the law "On Culture" dated December 12, 1996. Articles 23 of "The Code on administrative violations" dated January 30, 2001 and 188-8 of the Decree of the President of the Republic Kazakhstan that is equal in force with law dated March 17, 1995 determine the measure of responsibility for the violation of the norms of the above-mentioned legislative acts.

The reproduction of printed texts from the libraries' funds is possible according to the law on copyright and related rights (June 10, 1996) while observing certain conditions. They are written in Article 20 of the law.

The telecommunication technologies opened new possibilities for the preservation of the libraries and access to them. The libraries are capable of keeping the state standard of digital documents. The law on the local state administration of the Republic of Kazakhstan dated January 23, 2001 in Article 27 puts under the competence of the administration (akimat) of the region, capital, city of republican significance the organisation of work for the preservation of the historical and cultural heritage, rendering assistance in the development of historical, national and cultural traditions and customs of the population.

4 Conclusion

The library legislation aims to solve the issues of planned and gradual territorial placement of state libraries and their network interaction. An important precondition of the latter is the harmonisation of library laws with the norms of related legislation on different problems, including the copying and translation of texts, sound, image under the copyright in digital

format for long-term preservation of documentary heritage and provision of them for public use, the cooperation of libraries in the digital environment and others.

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Legal Deposit in Changing Information Infrastructure

Ravinder Kumar Chadha*

1 Introduction

One of the fundamental responsibilities of a national library is to act as a collector of the historical, literary and cultural record of the nation. It is essential that there is a means of identifying and maintaining recorded information in perpetuity. Without it, there would be no record of the past, and thus no adequate means of identifying, understanding or replicating researches of the past as part of the continuing cycle of experimentation and advancement of knowledge. While the burden of collecting responsibility may be shared among a group of libraries, it is the national library, which has over-riding responsibility for ensuring that the nation's published archive is properly organised, and that publications will be available now and in the future.

Most national libraries have traditionally built up their published collections through legal deposit, a statutory provision that puts a legal requirement on publishers to deposit their works in designated repositories. Legal deposit in most countries has traditionally applied to print publications because for centuries the traditional means of storage and display of publications was as print on paper. The development of new carriers for the storage of information, traditionally produced on paper, has brought about a fundamental change in thinking among professionals about future collection policies and storage requirements and an awareness that in order to maintain comprehensive collections of national publications for present and future generations of users, it will be necessary to obtain an increasing amount of non-print material.

It is strongly felt that governments should provide statutory rights to enable national libraries to receive print and non-print publications including electronic through legal deposit. At the same time national libraries have a duty to serve current and future generations of users to support scholarship,

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research and enterprise. As other techniques have developed for the production and delivery of publications, and as the number of publications produced in other formats has increased, some nations have put in place revised legal deposit legislation to take account of the newer publishing media. In France, where legal deposit has its origins, there has been a progressive evolution of legislation, the twentieth century having seen the most significant changes. The most recent changes, which came about in 1992, allow for more or less all types of publications to be deposited: not only are print publications eligible for deposit but so are electronic publications and other forms of non-print publications which make up the nation's published archive.

2 Legal Deposit

Legal deposit is a statutory provision which obliges publishers to deposit copies of their publications in a few designated libraries in the country in which they are published, for example. Legal deposit extends not only to commercial publishers but also to private individuals, clubs, churches, societies and organisations. Legal deposit of the material is the sole responsibility of the publisher or author.

2.1 Requirements of Legal Deposit

The Acts requiring deposit have a number of common features.

Definition of a Work

A work can be a book, a periodical such as a newsletter or annual report, a newspaper, a piece of sheet music, map, plan, chart, table, program, catalogue, brochure or pamphlet. In some states it also includes material published in electronic format such as CDs and computer disks.

Definition of Publication

A work is deemed to have been published if reproductions of the work or edition have been made available (whether by sale or otherwise) to the public.

Best Copy

The copy of the material must be a copy of the whole material and must be the best copy of that material as published. For example, if both a hard cover bound edition and a paperback edition are published, one copy of the hard cover edition must be deposited.

Second and Subsequent Editions

A copy of a second or later edition in which copyright subsists does not have to be deposited unless it contains additions or alterations to the text or the illustrations. If a second or later edition does contain such additions or alterations then the best copy of that edition must also be deposited. If a book is reprinted with a change to the title, or any part of the content, or by a different publisher, it is considered a new edition.

Claiming

When a legal deposit library finds that it has not received a published item on legal deposit it claims the publication from the publisher.

2.2 Benefits of Legal Deposit

The National Library and other deposit libraries assume an obligation to preserve all material lodged with them. Legal deposit ensures that the works of authors and publishers will survive for the use of future generations. The comprehensive collections of national publications formed in this way provide the means for research into all aspects of life, history, culture, artistic, commercial, technical and scientific endeavour of a country. Although there are many possible reasons for establishing legal deposit legislation (e.g. to support the collection of national statistics on publishing, to provide materials for exchange purposes, to protect intellectual property rights), it is assumed that the main purposes of legal deposit are to create an archive of national publications and to create an authoritative national bibliographic record. Virtually all existing legal deposit legislation enables those two essential activities to take place. It is just as appropriate that they should apply to the electronic publishing environment as they do to the print-on-paper environment.

Records for legal deposit publications are made available through online National Bibliographic Database. This means that all publications are brought to the attention of potential users through author, title, subject and many sophisticated electronic search strategies.

2.3 After Deposit

- The National Library creates a record describing the publication and makes it available through the national bibliography and the Library's database.
- It de-acidifies, where applicable, any print publications that need treatment. (This applies to a decreasing number of publications, as most fine paper now used in Canadian publishing is alkaline.)

- One copy of every publication, in any format, is stored in the National Library's preservation collection, where it is kept in a carefully controlled environment and allowed limited use only. The objective is to ensure its availability for future generations. Where applicable, the other copy is placed in the National Library's service collection for use as required.
- All use is subject to copyright laws.

3 Impact of Information Technology

The last forty years have witnessed rapid developments in the field of IT with the advent of electronic means of representing and transmitting information. Numbers, texts, sounds and images may all be represented in electronic form.

Electronic publications may be described as the use of electronic means of communication to make information available to the public. Electronic publications are stored in computers and may be displayed for viewing either on a computer screen or as a print-out. The production process itself need not necessarily involve electronic techniques until the final stages. There is a whole range of possibilities for production from the use of computers for a small part of the production process to the making of the whole process electronic. There are already many types of electronic publication. They include:

- electronic equivalents of print publications such as books, journals, pamphlets, etc.
- interactive databases containing, for example, bibliographies, statistics, spatial data, image data or text
- interactive multimedia such as games
- software and expert systems
- new publication forms such as bulletin boards, discussion lists and electronic pre-prints which are available through electronic networks.

These may be made available as individual physical items on diskette, CD-ROM or other off-line media, or they may be made available through on-line host systems or directly to the user via computer networks. They may appear in electronic form only or they may be published in electronic form and as print on paper, in parallel. There is also retrospective publication which converts the record of the past to electronic form for better access, preservation of content and the production of new works.

The availability of computers and the growth of electronic networks make it possible for authors to bypass conventional means of publication and to make their works available over networks. Electronic techniques are increasingly being used not only to represent publications of the form traditionally associated with print on paper but also to represent items traditionally associated with other media. It is now possible to store and transmit videos in electronic form and it has for some time been possible to represent sound recordings in this way. The advent of multi-media electronic publications, where texts, sounds and images are packaged together, shows the capabilities of the new technology.

4 International Scenario

Legal deposit in various countries is sometimes established through an Act dedicated to legal deposit, sometimes through a Copyright Act and sometimes through the Act of a national repository. In France, Finland and Sweden, legal deposit is contained within legal deposit legislation. A new Legal Deposit Act in France was passed in 1992 and came into effect in 1994. The new legislation applies to print and non-print materials. In Finland, the Legal Deposit Act of 1980 covers print, sound and image recordings and a separate Legal Deposit Act of 1984 covers motion pictures, films and videos. In Sweden, the Legal Deposit Act of 1978 also established the National Archive of Recorded Sound and Moving Images. A more recent Legal Deposit Act of 1993 enforces the legal deposit of "hand-held" electronic documents and other non-print formats.

In Australia, the UK and the USA, legal deposit is contained within copyright legislation. In Australia, legal deposit legislation for "library materials" is contained within the Copyright Act, 1968, and the National Library is designated as the national repository for deposit materials. The definition of "library materials" is, however, limited to print-on-paper publications only. A joint proposal has been made to extend the range of publications covered by the National Library and the National Film and Sound Archive. The proposal recommends that legal deposit provisions continue to be maintained within the Copyright Act, rather than being moved to the National Library Act or to a separate legal deposit act. Legal deposit in Australia has always been associated with copyright and it was felt that it would be simpler to maintain that link and take advantage of a concurrent review of copyright legislation. Existing UK legal deposit legislation is contained within the Copyright Act of 1911. The British Library has recommended that new legislation for non-print publications be kept quite separate from copyright legislation to make clear the distinctions between

legal deposit and copyright. In the US, legal deposit requirements are contained in the Copyright Act of 1976. That Act gives the Copyright Office of the US, in the Library of Congress, the authority to issue regulations to require deposit of the "best edition" of works in all formats.

In Canada and Germany, the National Library Acts enforce legal deposit. In Canada, Section 13 of the National Library Act (RS 1985) enforces legal deposit and the National Library Book Deposit Regulations of 1995 contain further details. In Germany, the Act of 1969 concerning the Deutsche Bibliothek enforces the deposit of printed works. Deposit is controlled by Regulations concerning the delivery of deposit copies. In Spain, the Act of 1971 of the Instituto Bibliografico Hispanico covers legal deposit.

The incorporation of legal deposit legislation within the Act of a national repository will define legal deposit in terms of the functions of the national repository but will leave undefined the role of any other national collecting institution. This will not be a problem if there is only one national collecting institution but may not be the best approach if there are more. It is proposed that legal deposit provisions for electronic publications be incorporated into any existing provisions for print materials.

5 Indian Scenario

In India under "Delivery of Books and Newspapers (Public Libraries) Act 1954" the publisher of every book and newspaper is liable to deliver at his own expenses a copy of the book/ newspaper to the National Library at Kolkata and one such copy to each of the other three Public Libraries within thirty days from the date of its publication.

The definitions of book and newspaper mentioned in the Act are:

"Book" includes every volume, part or division of a volume, and pamphlet, in any language, and every sheet of music, map, chart or plan separately printed or lithographed.

"Newspaper" means any printed periodical work containing public news or comment on public news published in conformity with the provision of Section 5 of the Press Registration of Books Act, 1867 (25 of 1867).

The above law is silent about the role of National Library and other three Depository Libraries in cataloguing the publications for listing in National Bibliography, National Database and preserving for posterity. The above definitions of books and newspapers are also silent about the non-print material including electronic publications.

The National Library, Kolkata has to take the lead in identifying appropriate repositories to house electronic publications. The collection of publications traditionally associated with print on paper and now appearing in electronic form will form part of the collections of the National Library and other three repositories, which already have the right to receive the print publications.

6 The Handling of Electronic Publications

The libraries would require to equip and operate permanent and long-term facilities for management of electronic publications received through legal deposit. Electronic publications received through legal deposit need to be identified, acquired, registered, catalogued, stored and maintained. They must also be recorded in the national bibliography, preserved and made available to researchers. These processes also apply to print publications but it would appear as if it will take longer to process electronic publications than it will to process print publications. Moreover, the effects of one process on another are likely to be more pronounced than in the case of print publications. Electronic media do not have the same life expectancy as high quality paper, and so bibliographic records will have to be amended more often to record the transfer of the content to new storage devices. The choice of storage medium and computer environment will need to cater for the way in which access is to be provided and preservation is to be undertaken. The interdependency of the processes should be taken into account in determining how each process is set up and operated.

The potential problems for the National Library are significant. Will it have the appropriate equipment (hardware and software) to make electronic publications available to users? Will it have the appropriate expertise to make the publications available? Will it be able to receive all the technical information it requires from publishers in order to make its publications available? This section looks at the processing of electronic publications which will be essential if legal deposit is not to be an end in itself and the materials are to be made available to all who need to use them.

(a) Collection Development

Legal deposit should support comprehensive deposit and the National Library should be as comprehensive as possible in its approach to collecting materials. However, there should be no compulsion on the National Library to take everything and the National Library should put in place a collection development policy which enables it to select appropriate items for its collections.

The arrival of non-print media presents options and issues, which did not apply to print material. Some electronic publications are electronic equivalents of print publications. In these cases the repository will need to decide whether it wishes to collect both formats. Each format presents different options for users and is therefore reluctant to suggest whether both need to be collected. Factors to be considered include the extent to which the contents are identical, the value of each format in relation to selection and presentation of the content and ease of long-term preservation.

The issue of legal deposit is also concerned with on-line and off-line publications, including so-called "parallel publications" (publications made available on two or more media), and publications made available in electronic form only. It also applies to retrospective publication when this leads to new works but not when it simply replicates what was originally published in print. Some national libraries may choose to focus to begin with on publications with no print equivalent while others may choose to focus electronic materials which supplement materials they have long since collected in print. The choice will depend upon local preferences.

(b) Bibliographic Control and Record Creation

Libraries traditionally have described the contents of their collections through bibliographic records assembled into the library catalogue. Libraries with legal deposit responsibilities not only catalogue their collections but usually take responsibility for creating and maintaining the national bibliography, a listing of the publishing output of a nation.

Institutions that receive electronic publications on legal deposit will need to consider how to catalogue those publications and whether to add them to the national bibliography. It is suggested that electronic publications should be catalogued according to existing international cataloguing standards. The electronic publications are part of the national publishing heritage and that, as such, it is appropriate to include them in the national bibliography.

(c) Registration Process and Initial Checking

Print publications received through legal deposit are logged on arrival at the library. They are normally checked to ensure that they are complete and intact and are allocated a unique number so that they can be identified later. Legal deposit requires stringent record keeping. On the one hand, publishers wish to be sure that the publications they deposit are traceable and well looked after. On the other hand, the library needs to be able to

identify what has arrived so that gaps can be identified and claims can be made for items not deposited.

For electronic publications, the logging of receipt, checking of exterior packaging, assigning of accession numbers and claiming procedures should be the same as for print publications. However, certain additional steps will be required for electronic publications. It will be necessary to check the publications supplied are in the preferred formats, if a format was specified in the first place (e.g. Windows or Apple Mac version of the CD-ROM). It will also be necessary to check that all the application software normally sold with the publication is deposited and that the full set of user and technical documentation is provided.

The library may find that it needs not only to request the normal packaging and manuals which are sold with an electronic publication but also to request additional material which will enable the library to transfer the data from the original electronic medium onto a preservation medium. All the documentation supplied will be a resource in its own right. It will be crucial to the long-term availability of electronic publications.

Libraries have to do rigorous testing of electronic publications on a sample basis to ensure that they are in working order, not copy-protected and that the software supplied with them contains no computer viruses. It may be advisable to attempt to download small parts of the publication at an early stage to see whether full-scale downloading will be possible at a later stage for preservation purposes. If downloading does not appear to be possible, contact should be made with the depositor to see what provision can be made to provide access to the work for posterity. The results of all technical tests should be recorded so that appropriate information can be added to the catalogue record.

(d) Storage

A number of preliminary steps take place before publications can be stored in readiness for use. In many libraries, print publications are sorted into categories, size being one of them. Each item is then given a shelf mark and is shelved appropriately. Shelf marks are added to the catalogue records. These processes apply to more or less all publications. However, additional processes will apply to electronic publications received through legal deposit.

Storage options cannot be considered in isolation from the provision of access. A range of storage options should be considered in the context of

the arrangements and agreements that are likely to emerge over conditions of use. The conditions and types of use arrived at are likely to influence the technical solutions chosen to store and archive electronic publications. Will it be a system which allows national or international access to any of the institutions which have signed up to a particular network? Or will it be a system which only allows access to users who visit the premises? In this latter case, would there be a central point of access in the library or would access be permitted at terminals on every desk? One approach national libraries may wish to consider is to develop a system which will provide the means to store all the library's electronic items acquired by purchase, legal deposit, cooperative partnerships, licence agreements, and digitisation in an integrated fashion. Or it may wish to have several systems, one for each major publishing medium. There are many possibilities for storing and archiving electronic publications.

(e) Access and Retrieval

Access must be provided to electronic publications received through legal deposit although in certain cases there may be a period, agreed with the copyright holder, before which access would not be permitted. Each library should work within its own copyright and fair dealing laws but should otherwise make electronic publications as widely available as possible.

In many nations, there is still a long way to go to establish an acceptable level of understanding and mutual trust between national libraries and publishers especially in so far as legal deposit and electronic transmission of published works are concerned. Libraries cannot proceed without the support of publishers and will need to demonstrate to publishers that publishers will gain from legal deposit through wide publicity of their works and also long-term care and maintenance of them. This will most likely involve not just giving assurances that the content of publications will not be changed in any way, but also that access will only be permitted under very clear and strictly applied circumstances. Documentation will be required to describe the terms of agreement between libraries and publishers.

(f) Preservation

Electronic formats tend to have a short life span unless action is taken to ensure that they are maintained in a form which can be reformatted or refreshed. It is important that legal deposit provisions be worded in such a way that repositories have permission to copy, reformat, refresh or migrate deposited publications for preservation purposes. If this permission is not

granted, it will not be possible to maintain materials for posterity. In Norway, the Legal Deposit Act of 1989 gives the National Library authority to make preservation copies of materials. In the USA, the Copyright Act of 1976 gives libraries the authority to make preservation copies for use within the Library. The National Library of Australia has requested that revisions to the Copyright Act should permit repositories to re-format material in their collections for preservation purposes. A new Copyright Bill tabled in the Canadian Parliament has a provision in it that would allow libraries to make a copy of a work in its collection in an alternative format if the original format is obsolete or if the technology required to use the original is unavailable. However, such an alternative copy can be made only if it is not commercially available. The British Library seeks revised legislation which will enable copies of electronic publications to be made for preservation purposes.

The preservation of electronic publications is a developing field and an issue which needs to be addressed separately. However, as a basis for any preservation, the right to copy must be assured. Some legal deposit provisions for print publications may already include permission to copy for preservation purposes. It is essential that this be extended to cover electronic formats.

(g) Modelling the Resource Requirement

National Libraries granted the right to receive electronic publications through legal deposit will need funds to provide satisfactory storage accommodation, equipment and space and to employ appropriately skilled staff to record, catalogue, shelve, store, preserve and provide access to the publications received. The majority if not all libraries will not be sufficiently well endowed to be able to maintain and provide library and information services from collections of legal deposit electronic publications without additional, ear-marked funding for that purpose. The funding required will depend on many local factors. Moreover, experience is still developing as far as costs are concerned. No guidance on the magnitude of costs can be given. However, National Libraries are advised to estimate the likely growth rates of electronic publications within their nations to establish the likely magnitude of the legal deposit intake, and to identify the major elements of library and information service provision, in particular those tasks which are not required, or take less time, for the provision of services from print collections (e.g. the checking for quality of electronic publications, technical assistance to library users).

7 Conclusion

The National Library, Kolkata and three Depository Libraries have been collecting, managing and providing access to print material as per the provisions of Delivery of Books and Newspapers Act, 1954. They are currently not handling the electronic and other non-print publications. India has witnessed rapid growth in the field of IT. An increasing number of multimedia publications are now being published by institutions, research organisations and commercial publishers. This calls for an urgent need to review our existing Act, so as to cover non-print material including electronic publications. The National Library and other three Depository Libraries have also to augment their infrastructure and equip themselves for collecting, checking and managing this new form of publications. Facilities for identification, cataloguing, storage, retrieval and preservation have also to be developed by the concerned libraries. The National Library has to undertake the role of processing these publications for inclusion in the Indian National Bibliography and National Database of Indian Publications. Above all this calls for training of staff in handling yet another media to meet information requirements of the library users effectively and efficiently.

Indonesia: Country Report

Sungkowo Rahardjo*

1 Introduction

Indonesia is the largest archipelago in the world, comprising some 17,508 islands. Indonesia stretches from 6° north latitude to 11° south latitude, and from 9° to 141° east longitude. It is situated between two continents, namely Asia and Australia/ Oceania. This strategic position poses a significant influence on the country's cultural, socio-political and economic affairs.

The overall area stretches between the Indian Ocean and the Pacific Ocean. If the waters between the islands are incorporated, the area of the country becomes approximately 1.9 million miles².

The five main islands of Indonesia are Sumatera which is about 473,606 kms², Jawa 132,107 kms², Kalimantan (or Borneo, the third biggest island in the world) measuring 539,460 kms², Sulawesi 189,216 kms², and Papua (formerly West Irian) 421,981 kms².

2 The Development of the National Library System

2.1 The Organisation of Libraries in Indonesia

The National Library system in Indonesia has been decreed by the Minister of Education and Culture in the early 1980s, called the Main Policy of Library Development in Indonesia. This policy regulates that the development of libraries is to be geared towards the establishment of a national system to cope with the needs of information for education, research and culture as well as to promote the reading habit among the people. In this case, the National Library has the main task of developing and supporting all types of libraries in the country, e.g. by means of providing education and training to the librarians in the management and technical aspects of library.

The National Library System consists of:

- Regional Library (including mobile libraries)

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- Public Library
- Special Library
- School Library
- University Library
- National Library of Indonesia

1. Regional Library

The Regional Library, each located in the capital of the 26 provinces, was formerly the extension of the National Library but with a smaller scope, i.e. at the provincial level. In its course and development, however, since the establishment of the National Library until to date they have experienced several changes. From 1989 until 1999, such libraries were still under the administration of the National Library in Jakarta. But with the enactment of the Law no. 22 of 1999 on regionalisation (autonomy), those libraries beginning in the year 2000 have all been transferred to the management of the respective provincial governments. This number, however, does not yet include newly-established local governments which also have their own libraries adding up to the current number of 33 provinces. At present, the provincial libraries belong to the public library type.

In addition to these libraries, the provinces have their own mobile libraries using various facilities like trucks, mini vans, motorcycles and even bicycles for use on land, and boats for cruising the rivers like in the hinterlands of Riau and Kalimantan provinces.

2. Special Library

Special Library is one which is under the control of the government or private institutions, aimed to serve the activities of the institution to which it belongs. According to the 2003 data, there are 759 special libraries located throughout major cities in the country.

To mention a few: the PDII-LIPI in Jakarta which is a library specialising in Science and Technology, Pustaka in Bogor focusing on Agriculture and Biology, Airlangga University in Surabaya stressing Medical Sciences, etc. All these special libraries are interconnected and maintain close cooperation with each other and with the National Library as well. The special libraries currently have their own network called Forum for Special Libraries (FPK)

The Special Library consists of

1. Libraries of ministries and other government agencies : 608

2. Libraries of companies	:	24
3. Libraries of education and training institutions	:	28
4. Libraries of research and development agencies	:	16
5. Libraries of hospitals	:	8
6. Library of mass media companies	:	1
7. Libraries of foundations	:	67
8. Libraries of documentation and information centres	:	7

3. Public Library

Public libraries are situated in the capitals of provinces and districts as well as in municipalities, towns in sub-districts and in villages. They are managed by the respective local governments. At the moment, the number of public libraries in Indonesia is 824 libraries, comprising:

1. Provincial libraries	:	26
2. District/ city libraries	:	246
3. Sub-district libraries	:	33
4. Village libraries	:	173
5. Mosque libraries	:	296
6. Church libraries	:	39
7. Buddhist monastery libraries	:	8
8. Temple libraries	:	3

The public libraries have a network of cooperation, that is Forum for Public Libraries (FPU)

4. School Library

The status of school libraries was strengthened by Law no. 2 of 1989 on education, which states that every elementary school, junior high school, and senior high school, or vocational school must have their own library. The school library is under the auspices of the Ministry of Education. In one of its missions, the National Library supports the education and training of school librarians, as well as issuing guidelines and standards for school libraries. The number of school libraries in Indonesia now totals around 12,618 libraries, consisting of:

1. Elementary school libraries	:	7,613
2. Junior high school libraries	:	2,901
3. Senior high school libraries	:	2,104

In maintaining cooperation, school libraries have a network named Forum for School Libraries (FPSI).

5. University Library

The number of university libraries, state as well as private, is now 1,585 libraries. This type of library is a prerequisite for every higher learning institution in Indonesia. Many of the well-known state as well as private universities have their own libraries with an established network of cooperation among themselves. Many of them are already automated, e.g. Library of the University of Indonesia (UI) in Jakarta, Library of Petra University in Surabaya, Library of the Bogor Institute of Agriculture (IPB) in Bogor, and the Library of Bina Nusantara University (BiNus) in Jakarta. The existing network, i.e. Forum for University Libraries (FPPTI), maintains close cooperation among university libraries and librarians.

University libraries consist of:

- | | |
|--|-------|
| 1. Libraries of Private Higher Learning Institutions : | 90 |
| 2. Libraries of State Higher Learning Institutions : | 1,495 |

6. National Library of Indonesia

The National Library of Indonesia is located in the Jakarta Capital Territory (DKI Jakarta). It was established by a decree from the Minister of Education and Culture, on May 17, 1980. By a presidential decree No. 11 of the year 1989, it then became a non-ministerial government agency which is directly responsible to the President under the name of "Perpustakaan Nasional Republik Indonesia" (the National Library of Indonesia) with the following main tasks:

- To collect and preserve national publications both written as well as recorded materials (Legal Deposit Act No. 4 of 1990)
- To carry out information services to the public
- To develop and foster all types of libraries and to establish cooperation within the country as well as overseas
- To act as a national coordinator for libraries and centres of documentation in Indonesia

The status of the National Library of Indonesia was getting even stronger by the following Presidential Decrees:

- Presidential Decree No. 50 of the year 1997
- Presidential Decree No. 67 of the year 2000

- Presidential Decree No. 178 of the year 2000
- Presidential Decree No. 103 of the year 2001

Based on the Presidential Decree No. 103 of the year 2001, in executing its main duties and functions, the National Library has the following structure of organisation:

- Director of the National Library
- Main Secretariat Office
- Deputy Director for Collection Development and Information Services
- Deputy Director for the Development of Library Resources
- Bureau of General Affairs
- Bureau of Legal and Planning Affairs
- Centre for Deposit of Library Materials
- Centre for Collection Development and Book Processing
- Centre for Library and Information Services
- Centre for Preservation
- Centre for Library Development Interests
- Centre for Development of Librarians
- Centre for Education & Training

2.2 Development of New Libraries

The establishment of new libraries in Indonesia nowadays is getting more and more active as evident in the fact of the increasing interest on the part of government institutions, the regional government in particular, such as in the case of the Municipal government of Blitar (East Java) in their effort in setting up the presidential library of Bung Karno, the first president of Indonesia. Also of importance is the cooperation with the Hatta Foundation to conduct a series of activities dealing with the reading habit development in 2002, and the plan to build the Library of Bung Hatta (first Vice-President) in the town of Bukittinggi (West Sumatra) with the assistance of the local government. In addition, the National Library has also obtained loans from the World Bank to implement the Library Development Project in Indonesia for the period 2001-2003 targeting public and school libraries in three provinces. In an attempt to further promote the reading interest of the public and encourage them to visit the library, the month of May has been declared the "National Book Month" and September 14 as the "Library Visit Day".

There have also been quite a number of non-governmental organisations embarking on activities related to libraries with the objective of developing reading interest as well as of enhancing the level of intelligence of the grass-root level, among others, by establishing libraries in the rural regions, slums, remote areas, etc. libraries come under different names like reading house, community library, children's corner, etc.

2.3 Types of Visitors and Members of the Library

According to the data of visitors and members of the National Library from 2001-2002, they are generally grouped into three categories, namely university students, the general public, and (third year) high school students. Out of the three categories, university students take up the biggest population of the membership. The second biggest in terms of membership and visitors is the public. The statistical data of the membership of the National Library covering the period 2001-2002 are given below:

By gender	2001	2002
Male	6,177	8,254
Female	8,001	10,571
By category		
University students	11,567	15,315
General public	1,516	1,920
School students	711	1,041
Membership renewal		
University students	326	471
General public	56	76
School students	2	2
Total # of members	14,718	18,825

4. Cooperation with Other Institutions

In carrying out its duties and functions, the National Library maintains cooperation with various non-governmental organisations, namely:

- *Ikatan Pembaca Buku Indonesia Sumatera Utara* (Association of Book Readers of South Sumatera)
- *Jendela Dunia* (Window of the World)
- *Gerakan Masyarakat Gemar Membaca* (Readers' Community Movement)

- *Yayasan Bina Anak Indonesia* (Indonesian Children's Development Foundation)
- *Kelompok Clinta Membaca* (Reading Lovers Group)
- *Gerakan Pemasyarakatan Minat Baca* (Movement for Promoting Reading Interest)

3 Collection of the National Library

The collection of the National Library comprises books, newspapers, serial publications, maps, rare books, AV materials and the Nusantara manuscripts, totalling nearly 1,100,000 volumes. The Library also holds a unique and interesting collection not possessed by other libraries in the country, which consists of:

- local and foreign serials of the 18th century
- rare books in various languages of the 16th century
- reference materials (almanac, encyclopedia, dictionary and the like) issued in the 17th century
- local and foreign newspapers of the 17th century
- old and historical photographs
- ancient maps of the 12th century
- manuscripts collection

The collection of manuscripts are written in various indigenous languages and scripts, as well as using all kinds of old-fashioned outdated writing materials. The *Nusantara* manuscripts, as they are popularly called, constitute the nation's invaluable cultural heritage. They have been collected for more than 200 years, or more precisely since the establishment of the cultural institution *Bataviaasch Genootschap van Kunsten en Wetenschappen* in 1778, the former depository agency during the Dutch colonial period. Most of the collection came from such collectors like Pigeaud, Brandes, Cohen Stuart, Riedel, Killian, Von de Waal, Van der Tuuk, and Artati Soedirjo.

The National Library publishes the Indonesian National Bibliography (BNI) and National Union Catalogue (KIN) which are basically the two main publications, also the Newspaper Articles Index, Catalogue of the United Nations Publications, Catalogue of Religion, and other secondary publications. The National Union Catalogue includes in its membership 83 libraries that have submitted their catalogue data to the National Library, and involves catalogue data of over 2,500 entries per annum.

Of significance, the National Library, based on the Legal Deposit Act No. 4 of 1990 on the mandatory deposit of printed and recorded materials, has the duty of collecting and preserving national publications both in the form of printed or recorded materials that will become the embryo of the Indonesian Collection in the Library. Till now the number of this deposit collection totals more than 67,000 titles (consisting of collections of monographs, AV materials, journals, newspapers and other serials). These materials are listed in the quarterly Indonesian National Bibliography.

Supporting Facilities

In Indonesia a network of digital libraries exists known as the Indonesian Digital Library Network (IDLN), and in its relatively young age of three years, it has already succeeded in bringing 80 institutions into the network with a collection of more than 2,000 digital files. In 2001, members of IDLN 3,467 comprising undergraduates (40.78%) private employees (8.83%), academic graduates (7.39%), others (7.24%), post-graduates (7.01%), librarians (5.97%), university lecturers (5.08%), researchers (4.07%), general public (3.20%), university staff (2.94%), civil servants (2.94%), civil servants (2.74%), school students (1.5%), school teachers (1.36%), doctoral candidates (1.07%), NGO's (0.87%) [source <http://idln.lib.itb.ac.id>]

4 Services of the National Library

The National Library offers the following services to the public:

Library and Information Services

- reference
- guidance and counselling
- newspaper clippings
- reproduction and media transformation
- annotated indexes
- transliteration
- Internet services
- photocopying services

Library Cooperation and Information Network

The Library cooperates with various institutions both state and private at the national, regional and international levels. Specially for the information network in the field of social sciences and humanities, abbreviated JIBIS, the National Library is acting as facilitator in the program.

Preservation of Bibliographic Materials

The National Library offers preservation and conservation services to government and private institutions if their collections need such services.

Deposit of Library Materials

As a research library, the National Library serves as the National Deposit Agency which carries out activities of collecting, keeping and preserving all printed and recorded works produced in Indonesia, based on Law No. 4 of 1990 and the Government Regulation No. 70 of 1991 on the mandatory deposit of printed and recorded works, and Government Regulation No. 23 of 1999 on the implementation of the deposit of printed works and the administration of documentary films.

Cataloguing in Publication (CIP) and ISBN

Every agency that plans to publish a book may contact the National Library to get *Katalog Dalam Terbitan/KDT* (Cataloguing in Publication/ CIP) and ISBN (International Standard Book Number). CIP and ISBN. Imprinting ISBN on their publications will be very useful in the book marketing business.

Education and Training

One of the main tasks of the National Library is to implement the functions of human resources development. In order to do so, the National Library conducts various types of education and training activities in the field of library science, e.g. library training, library automation course, bibliography course, conservation training, etc.

Library Development and Study of Reading Interest

In relation to the main task of developing libraries, the National Library carries out studies, standardisation, accreditation of all categories of libraries, coordination and promotion of the reading habit with related agencies, including issuing *Nomor Pokok Perpustakaan/NPP* (Library Registration Number) to all libraries in Indonesia.

Developing Librarianship

The role of the National Library in the field of human resources development is by improving librarians through strengthening the functional position of librarians and giving of credit points as well.

5 Education and Training of Librarians

The association of librarians, *Ikatan Pustakawan Indonesia/IPI* (Indonesian Library Association) with its secretariat located at Jl. Merdeka

Selatan 11, Jakarta, was established in 1973 and presently has about 6,000 registered members comprising 2,000 at professional level and 4,000 para-professionals. In September 2002, the 9th Congress of IPI was held in Batu, East Java, and has elected the succeeding executive members for the period of 2002-2006.

In addition to IPI, an association also existed, i.e. *Klub Perpustakaan Indonesia/KPI* (The Indonesian Library Club), in addition to four library forums which are the *Forum Perpustakaan Perguruan Tinggi Indonesia/FPPTI* (Forum of Special Libraries), *Forum Perpustakaan Khusus/FPK* (Forum of Special Libraries), *Forum Perpustakaan Umum/FPU* (Forum of Public Libraries), and *Forum Perpustakaan Sekolah Indonesia/FPSI* (Forum of School Libraries). All these groups constitute a form of cooperation network with the National Library as its main facilitator, and within the context of the exercise of library development function.

Library education is carried out in state and private higher learning institutions, also by the National Library itself, in the form of diploma, undergraduate and graduate studies and library trainings as well. Currently, there are 16 universities in Indonesia offering library study, e.g. University of Indonesia in Jakarta (diploma, under and postgraduate studies), Padjadjaran University in Bandung (under-and postgraduate studies), Gadjah Mada University in Yogyakarta (postgraduate study). To regulate paraprofessional training, the National Library has released guidelines for the accreditation and certification of library education for institutions conducting these sort of trainings.

6 Copyright Law

In Indonesia the protection of copyright is known as *Hak Atas Kekayaan Intelektual/Haki* (Intellectual Property Rights). This regulation consists of 5 laws that will protect the copyright of individuals as well as corporates:

- Law No. 30 of 2000 concerning trades secrets
- Law No. 31 of 2000 concerning industrial design
- Law No. 14 of 2001 concerning patent
- Law No. 15 of 2001 concerning brand
- Law No. 19 of 2001 concerning copyright

The institution that deals with copyright matters in Indonesia is the Ministry of Justice and Human Rights, more precisely the Directorate General of the Intellectual Property Rights.

The National Library of the Republic Kazakhstan in the Informational-Telecommunication Medium from 1987 to 2003

Mukanova N. A.*

There in the Museum of the National Library of the Republic Kazakhstan among the many documents and exhibits one can see the first computer that appeared in the library of the "Mazovia" brand. In 1989 among the five computers that were bought it started its historical mission in the National Library that was then still called after Pushkin the great poet that all the Almaty dwellers loved and who still persist in calling the library with the olden name. Today the computer can be seen as an archeological exhibit. So impetuously and deeply, so much more qualitatively there have taken place the changes in the informational-telecommunication technologies in the minds of the people at large and in our library as well.

What is today the National Library of the Republic Kazakhstan? This is the computerisation of all library processes, the creation of the domestic software of the republican significance called RALIS, the creation of multimedia products, of an electronic catalogue and Internet resources. This is the creation of the Kazakhstani centre of corporate cataloguing, of the electronic documents delivery service, "The Memory of the People" program, the digitisation of the exclusive National Library and provision of access to it. This is the National "Zere-Sauyt" program of preservation of the written documentary heritage, the creation of the Kazakhstani National committee by "The Memory of the World" UNESCO program, the creation of the Library Association of the RK, the elaboration of the Law on librarianship of the RK, the elaboration of the rural library model under the motto "There is to be no informational province!". This is the movement on perfection of librarianship in Kazakhstan in the form of annual professional forums called "The library capital of the year". There are the

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mighty publishing facilities for the librarianship professionals of Kazakhstan and the CIS, the Post-graduate course in the National Library, the fruitful participation in the activity of the International Federation of Library Associations and the Eurasia Library Assembly. All the programs, projects, trends of development of the National Library and other Kazakhstani libraries are inconceivable without the elaborations, inculcation and use of library-informational technologies in the world computer-telecommunication medium.

Every history has its prehistory.

All this started in that distant year 1986 from the point of view of quickly flowing time. Roza Amangaliyevna Berdigaliyeva, the recent director (from 1987 to 2003) of the National Library of the RK. In that memorable year the director of the Republican Youth's Library of Kazakhstan was hosting guests from Moscow. The Moscow software specialists having learned about the progressive young director of the youth's library came forward with the proposal on the automation of library processes. A pity, but the proposal was turned down, but not by her but by the officials. We do not know the reason of the refusal but Berdigaliyeva in subsequent years met with the repudiation at first from the officials and the colleagues, but afterwards there was understanding and complete engagement in the work. In reality there is nothing that one can wonder about here, this is human psychology, people must become ripe for new fields never trodden upon before. To go forth to the target chosen at all costs, to convince and convince the people with new ideas and implement them in the end – such was the rule of R.A.Berdigaliyeva and us, the following workers of our library: Sapargaliyev E.B., Sultanayev A.K., Tasybayeva S.A., Shaimardanova Z.Zh.Balabekova G.H., Kistaubayeva K.S., your humble servant the author of the essay and many others. It is general knowledge that success in anything depends upon people, upon enthusiasts that strive to change life for the better.

At the end of 1988 there emerged the Order by the National Library of the Kaz.SSR after A.S.Pushkin (today renamed The National Library of the RK) on the creation of the commission on automation of library processes (N67/L dated December 20, 1988). The task set before the commission was the search for and provision of resources for new technological library goals. On studying the issue the idea was approved on the creation of home program of automation of library processes with the use of most modern foreign informational technologies. The choice fell upon the Scientific-

productional union named "Systemotechnics" headed by Zh.K.Shangitbayev, an enthusiast in the field of informatisation, an entrepreneur of a new formation. There in his team among the younger enthusiastic software specialists was A.K.Sultanayev who took away into the new library field his friend also a software specialist E.B.Sapargaliyev. These two men stayed in the library. They and other young specialists - graduates of the Kemerov Institute of Culture, the faculty of automated library processes and computing technology, had before them one of the most important tasks to solve – to create an automated management system for library processes.

During the course of the next year there were acquired computers, copiers, there were elaborated and prepared the automated subscription, the registration of fonds, the work on regional studies and informational servicing.

In 1991-1993 there were acquired computers and also the spare parts for the creation of local networks, the solid experience is accumulated in the Small state enterprise created by the Order of the director (N11 dated March 11, 1991) named "ABIS" headed by E. B. Sapargaliyev. The library by that time had got a good computer pool of 65 machines. By the end of 1994 12 out of the 20 departments of the Library were already working in the automated regime. It is in the above-mentioned years that the peak of active assimilation by the library workers of new technologies took place, and the understanding of necessary rethinking and reactivating of their activity. For instance, one of the organisers and an active participant of the regional seminar-school on the automation of library-bibliographical processes and on the problems of acquisition of literature in foreign languages that was jointly held with the Scientific Library of the Academy of Science of the Kaz.SSR in Almaty at the beginning of 1991 was the department of foreign literature of the state republican library after A.S.Pushkin. During one week there in the department of foreign literature were held practical exercises for the library workers of Almaty. The studies or now they would be called master classes were headed by specialists from Moscow – representatives of the State Public Scientific-Technical Library, State Lenin Library and the Bureau of the Library of Congress of the USA to the USSR.

In these years several events took place in the history of the Library: In December 1991 the Republic of Kazakhstan became a sovereign state and the State Republican Library after A.S.Pushkin acquired the status of

the National. The functions of the state national book depositary, library study, informational-bibliographical, country-study centre it carried out in the course of eighty years. And in 1991 there to the tasks of the National Library of the RK was added a new one: the provision of readers with the maximum full and operative information on the basis of access to the domestic and foreign databases and documentary collections. That is the library took upon itself a new important mission – the integration into the world informational community.

A considerable achievement of the National Library of the RK is the creation of domestic applied software products of automated library-informational systems (ABIS), the unification of all republican libraries into a single computer network – the republican automated library-informational system (RALIS). There in 1995-1996 were being formed the country-study, actual, personal databases, there was created the Electronic catalogue, there automated the acquisition processes, book processing, storage. The RALIS program was bought by the regional libraries (in Eastern Kazakhstan, Kokshetau, Pavlodar, Western Kazakhstan), there were experiments held on teleaccess to the Databases of the National Library of the RK from the Regional Universal Scientific Library of Kokshetau city and also the readers of the NL and within Almaty city.

On June 14, 1996 in the NL there was a solemn opening of the Access point to the Internet resources or to put it simply the Internet-class. This was the result of the joint project of the NLRK and International Research and Exchange Board (IREX) (USA) on widening access and Internet-teaching (IATP). Only during the course of a year the number of the Internet-class users reached 12.306. Cooperation with IREX lasted 7 years. This is unprecedented in the international practice of IREX and the National Library as well. But here we shall proceed slowly.

The next page of our historical chronicle is the year 1997.

For the wide-spreading of knowledge about Kazakhstan through the Internet there was created the Web-page on the National Library of the RK, about the classics of the Kazakh literature Abai and M.O.Auezov. This was the first version of the NL site.

All the bibliographical databases of the National Library of the RK were unified and submitted into open access for the NL readers.

October 1-4, 1997 by the initiative of the Department of Literature in foreign languages of the NLRK there took place the First Kazakhstani

conference by the theme “The problems of preservation of the documentary heritage of libraries and archives”. Among the organisers were the UNESCO Representation to Kazakhstan, the Eurasian Library Assembly, the Library Association of the Republic of Kazakhstan and the National Library of the Republic Kazakhstan. The participants were representatives of the government of the Republic of Kazakhstan, the leaders and chief specialists of the libraries of Armenia, Kyrgyzstan, Russia, Uzbekistan, Ukraine, Germany, Iran, Turkey and Kazakhstan.

The main idea of the speakers was on how to preserve the documentary written heritage from the natural and physical influences and how to provide access to documents. There at the conference was raised the issue of digitisation of most valuable collections. For us it was a novelty. There in the reports of Hans-Peter Gee, Vice-President of IFLA, the creator of the PAC system – preservation and conservation of documents, Director of the Wurtemberg Land Library and G.A.Kislovskaya, deputy director of the All-Russian State Library of Foreign Literature, leader of the Russian section of the IFLA PAC program was stated the importance of digitisation of documents for preservation as well as the creation of electronic collections for subsequent placement into the Internet for facilitating access to them. This conference played a major role in the understanding of new tasks and the transition of the NL to the digitisation period.

In October 1998 by the initiative of the National Library of the RK there took place the congress of library workers of Kazakhstan. The theme of this second congress was “The libraries of Kazakhstan in the 21st century”. The number of those who participated was 200. It was organised by the Ministry of Culture, Education and Healthcare of the Republic Kazakhstan and the National Library of the Republic Kazakhstan.

There in the report of R.A.Berdigaliyeva named “The library unity: strategy for the 21st century” was summarised the general striving of the librarians of the republic for innovation. The main part of the report was dedicated to the elaboration of a strategic trend for the acceleration of scientific-technological progress in librarianship to provide computerisation of the libraries of the country, to equip them with the communication equipment, new contents, the automatic transition of printed format into the digital one, the inculcation of the CD-ROM technologies.

That same year the director takes up the decision for more rational use of the Internet resources and the creation of the republican network to organise within the framework of the NL a specialised division with the

simple name Internet Department (the Order N30 dated August 7, 1998). But by the Order of the Ministry of Culture of the RK on the NLRK staff-down-sizing by half there in the Library was carried out complete reorganisation of the structure. A decision was taken a decision to optimise the staff, to unite some departments relative by type of activity. Thus the Internet Department, having hardly started work, was transformed into the Internet sector under the Centre of National Bibliography and Scientific Information. But it did not preclude the sector to carry out big work. Because we, i.e. the author of this essay and another woman-worker were thrilled with the new prospects. We had to attract other workers from other departments, find sponsors and partners. In the course of a year we mastered the multimedia-technologies, the Web-technology and other operational kinds of work on computer in order to be able to carry out such serious projects like the CD-ROMs "The Musical Heritage of Kazakhstan", "The Heritage of Yassau in the National Library of the RK", the NLRK site, the IATP-2 project jointly with the IREX to implement unification of the most important divisions of the library into a single Intranet- and Internet network and also to carry out trainings for users as well as the workers of the NL on how to work the computer and in the Internet; to carry out the conference named "The Internet made us friends", which became traditional.

In October 1999 there was the presentation of "The project of creation of virtual library and Internet-resources in the NLRK", organised by the Embassy of the USA to the Republic of Kazakhstan and the National Library of the RK.

In November 1999 in Ufa city took place the International symposium "The unique manuscripts from the collections of the countries-participants of the TURCSOI". The National Library of Kazakhstan is the only participant of such a serious forum who presented the manuscript heritage of Hodja Ahmed Yassau from the collection of rare books and manuscripts on electronic medium. All the materials of the given project were also presented at the NLRK site.

In 2000 there was elaborated the project named "The national program of preservation "Zere Sauyt", which planned among other tasks the digitisation of the rare book and manuscripts collection of the NL. At full speed there went the process of perfection of the RALIS and stage-by-stage unification into a single network of the regional universal scientific libraries of Kazakhstan.

In autumn, 2000 there was solemnly celebrated the 90th anniversary since the foundation day of the National Library of the RK. By the jubilee

date there was created the CD-ROM "The National Library of the Republic of Kazakhstan is 90 years of age", there was held the International conference "The open informational resources", whose purpose was the singling out and coordination of experience of accumulated knowledge in the creation of a single informational space. The conference participants who were representatives of all regions of Kazakhstan, put down their signatures under the Resolution on the creation of:

- The interstate Scientific Council on librarianship
- The Centre on the inculcation of the RALIS program in the libraries of the republic
- The Centre of corporate cataloguing
- The Council on informational resources
- The Consortium of libraries for the servicing of scientific workers
- The cataloguer's school

Most of the decisions have been already implemented and the remaining ones are in the stage of final burnishing.

In February 2000 there took place the Kazakhstani-American seminar the theme: "The Library Association of the RK: Partnership in Quest of Effective Development Strategy", where considerable attention was paid to the issues of using new technologies in the general educational and informational process.

During the days of the seminar was the opening ceremony of the Electronic editions' hall for the NL readers held with the financial support of the USIS. Equipped with the latest equipment and with the access to the Internet resources, having a multiplicity of reference, fictional, art-study collections of electronic editions of the near and distant foreign countries and Kazakhstan, the Hall immense big popularity with the readers of the NL, because it gives them big opportunities for the reception of information that is at the moment lacking in the library.

In 2000 the specialised commission of experienced leaders of the NL elaborated the program for the construction of a new building of the NL in Astana city. It has been decided to create the National Electronic Library of Kazakhstan.

In August, 2000 the National Library of the RK was visited by the President of the country N.A.Nazarbayev who gave an elaborate, estimate

for the achievements of the NL in the development of informational technologies in librarianship of the republic.

2001. With the financial support of ExxonMobil the activity of the Electronic documents delivery service started.

On the initiative of the NL director there started the movement "The library capital of the year". The first capital of the year was chosen and the choice fell upon Karaganda where in November there took place the republican conference by the theme "Libraries as a resource of spiritual enrichment of Kazakhstani society".

Within the framework of the conference the first Video-Internet-conference took place in the history of the RK, whose motto was "The Library: yesterday the sanctity of knowledge, today the library without boundaries."

The Video-Internet-conference Karaganda-Uralsk-Almaty was held in the modern Kazakhstani-Russian Humanitarian University of Karagandy city. Representatives of the Ministry of Culture, Information and Public Concord of the RK, the Chancellory of the Prime-Minister of the RK, the Ministry of Culture of the Russian Federation, the International Academy of Sciences of the higher school of Russia, the Karaganda Regional Department of Culture and others participated.

A big resonance in the virtual environment was given by the first competition of sites of the Republic of Kazakhstan.

At the end of the year there took place the II international conference "Internet made us friends". The National Library of the Republic of Kazakhstan jointly with the International Research and Exchange Board (IREX) (USA) and the UNESCO Representation to Kazakhstan organised the second Conference "Internet made us friends". There in the work of the conference took place representatives of libraries of different departments, museums, archives, higher educational establishments, scientific-research establishments, mass media, telecommunication companies of Kazakhstan. There in the work of the conference also participated representatives of the Ministry of Foreign Affairs of the RK, the Ministry of Culture, Information and Public Concord of the RK, the Akimat of Almaty city, the diplomatic missions and international organisations accredited in the Republic of Kazakhstan. The main task of the conference was the elaboration of the vision of the national policy within the global Internet network.

The year 2002. The work of the Resource Centre for researchers began in the sphere of public politics in the dissertations departments. There was

created the Kazakhstani Centre of Corporate Cataloguing. There works at full throttle the country study documentary bibliographical data-base "Kazakhstanica". In the city of Uralsk – the library capital of 2002 there took place the republican conference by the theme: "Eurasianism – Integration of Cultures and Library Resources". There at the conference worked the section "The new technologies in the work of the libraries". Within the framework of the conference there took place the Republican competition of participation programs of Kazakhstani libraries in the campaign of the libraries of the world @your library, which takes place in our country under the brand @ñiçäiî êîðäiðäiäiüçää. The specialised exhibition of the programs @ñiçäiî êîðäiðäiäiüçää showed the great opportunities of the libraries in the presentation of their activity.

In 2002 the international conference "The Intellectual East and West in the Digital World" took place. Within the framework of the conference there was an exhibition of electronic editions "The new sign of the new times – electronic book".

At the exhibition were presented 230 electronic editions of Kazakhstan and foreign countries. At the conference there were discussions on the problems of creation of electronic library and the global library in the Republic of Kazakhstan, the possibilities for production and elaboration of Kazakhstani electronic book technology, there were demonstrated the best CD-ROMs of Kazakhstan and foreign countries.

The significance of this given action for Kazakhstan is actual because the integration of the national, cultural and scientific potential through new informational technologies means its global breakthrough into the international cultural-informational space.

In 2002 the work began. The bar-coding system under the financial support of ExxonMobil which by far facilitated work in the servicing of the readers and registration of literature.

At the end of the year there took place in Petropavlovsk city the Russian-Kazakhstani council on the electronic cooperation of libraries. At this council the leaders that determine library policy and also the leading specialists of the Russian State Library, the National Library of Kazakhstan and other Regional libraries of our republic discussed the issues of integration of library resources of Russia and Kazakhstan. Here started the unprecedented on the whole post-Soviet territory project of the Russian-Kazakhstani electronic library named "Frontier meetings", among whose tasks is the formation of electronic collections, of bibliographical and full-

text databases, the creation of the catalogue of Internet-resources about Russia and Kazakhstan, the placement in the Internet of texts, images, multimedia products, the strengthening of mutual links and cooperation between the biggest informational, educational and cultural centres (teleconferences of leading scientists, figures of culture and art), promotion of a society in both states based upon knowledge.

In May 2002 there started work the Kazakhstani Centre of Corporate Cataloguing (KCCC), that unites 36 libraries of the country. This is mainly the libraries that use in their work the RALIS. The main informational product of the KCCC is the Joint electronic databank on Kazakhstan.

The year 2002 turned out to be extremely fruitful for events of revolutionary character in the sphere of developing technologies for the improvement of library processes.

In the library capital of 2003 the city of Pavlodar the republican conference on the theme: "The new library for the new informational community was organised. The model rural library". The given conference has a very big significance for the state. In the modern digital world there is a clearly distinct line between the information-rich countries and information-poor countries, the so-called digital divide. What are the states to do to obliterate the inequality that influences the development of intellectual society and therefore the rich and stable society? This theme was the main one also at the Geneva summit by the theme "Libraries at the heart of information society". In Pavlodar, and in Geneva our former director, the reformist of librarianship in the republic Berdigaliyeva R.A. participated with the draft project for the formation of the national informational structure in the provinces of our republic.

The year 2003 finishes my historical chronicle. There for the post of the director of the National Library of the RK was appointed the scientist-orientalist, the state and public figure of Kazakhstan Murat Mukhtarovitch Auezov. He was assigned the leadership of the section on the preservation of written heritage by the special medium-term program of the President of Kazakhstan called "The cultural heritage". With the arrival into the library of M.M.Auezov our library is ascending new heights of its development. The mission of preservation of cultural-historical heritage is the most important constituent of spiritual and educational development of the Kazakhstani people. There are so many plans in this direction, including the researches of the huge cultural heritage of the Kazakh people, the summation of the multi-century experience of the national literature and

written literature, publication of the historical-literary journal *Rukh-Miras*, digitisation of rarities of Kazakh written monuments, provision of access to the collections of the National Library of the RK for real and virtual users. The assignment upon the main book depository of the country of the role of scientific-research institution in the field of written heritage means the trust shown from the state and this decision is right because it is here that millions of editions are in safe-keeping containing an enormous and great mystery of human thought, the limitlessness of intellect and talent of human kind, the multisided and multilingual culture, the printed expression of scientific and technical subtlety. And all this is the possession not only of the peoples of our country but of the whole world too. To save, to preserve and open to the population all these book treasures with the help of technology is the destiny of the libraries and their servants.

The National Library of Maldives

Habeeba Hussein Habeeb*

1 Introduction

The National Library of Maldives was founded in 1945, as the “State Library” by Ameer Mohamed Amin Didi, then the Head of the Department of Education. Since then it had been developing its collection, services and facilities in order to meet the various needs of its customers. Owing to political reasons, in 1948 the library was renamed “Majeedhi Library” in remembrance of one of the statesmen of the country, Ameer Abdul Majeed Didi.

On June 1, 1982, the library was again renamed “The National Library” by the reigning President of the Republic of Maldives, His Excellency Mr. Maumoon Abdul Gayoom. The President also incorporated the functions of both National and Public onto this Library. We are proud to claim that the National Library continues to serve the entire nation, as the oldest and the most universal institutions of its kind in the Maldives.

2 Building

The Library was housed in a four-storey building in the year 2000. This was built for the purpose of providing sufficient space for the increasing number users, who use our services. In the process we have tried to accommodate various types of reading materials and to provide access to as many services as possible.

3 Users

The library users are the general public, children, students, teachers, researchers and the government personnel.

4 Library Administration

Library administration involves the financial aspects of the Library building, staff and the library materials in addition to planning and development programmes.

It also includes the review and analysis of all procedures and clerical and administrative duties.

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5 Aims and Objectives

The aims of our Library can be said to contribute to the quantity of life, to promote the concept of a democratic society and to add to the total sum of the people's literacy and awareness towards gaining knowledge about the developing world and their environment.

To fulfil these aims, our objectives could be summarised into the following main components.

- Education - to foster and provide means for the development of the individual/ group at all levels of educational ability.
- Information - to provide users the very quick and accurate information over the whole range of human knowledge.
- Culture - to be the chief centre for cultural life and activities to promote participation and appreciation of all acts.
- Leisure and recreation - to play a positive part in encouraging, beneficial use of leisure and recreational time.

6 Other Issues

- To collect and conserve the National Literature, aiming at complete coverage.
- To produce a current National Bibliography
- To act as a National Bibliographic Information Service Centre
- To publish and to support the production of specialized bibliographies

The many services offered by our National Library are directly related to the above aims and objectives.

7 Collection

The library collection consists of a fair number of Arabic and Urdu books besides Dhivehi and English books. The collection consists of approximately 31,534 books. In addition, the library holds bound periodical volumes, reports, manuscripts, journals and other serials, newspapers and press cutting files. The books are categorised according to Dewey Decimal Classification 21st edition and catalogued according to AACR2.

8 Staff

The effectiveness of the library depends to a large extent upon the efficiency of staff and the manner in which their duties are organised.

The professional staff of the National Library are categorised into 4 main Units.

1. Technical Unit - Book ordering, Accessioning, Cataloguing, Classifying and Withdrawing are done within this section.
2. Research and Studies Unit - Making available various types of magazines, newspapers, journals and preparing of project files. Also maintaining current awareness by means of press cuttings, scannings, etc.
3. Training Unit-Training is given to part-time, full-time and in-service trainees. Running of library courses of different levels to all range of trainees. Mobile training is also given on request.
4. Operational Unit - where all the front office staff are looked upon. Organising of different service duties and overtime duties, Providing Statistical reports. Book processing and repairing is also done here.

Main duties of professional staff includes:

- Analyse the information requirements of the service users
- Select and organise materials to meet those requirements
- Select and manage staff for the purpose
- Devise and operate appropriate storage and dissemination systems
- Be aware of the changing technology applicable to the service
- Lead the team involved in training and developing the services
- Represent the service at management and policy board level.

Main duties of Non-Professional staff includes:

Non-Professional staff are there for the ultimate purpose of counter service, shelving, cyber services and photocopying. All these staff are supervised by the Operational Unit.

9 National Library Services

The National Library offers a variety of services for the benefit of their clientele, the chief of which is the lending of books and other material.

- Lending Services - given to members
- Reference and Information Service - where you get materials to refer to Reference section also provides study booths.

- Current Awareness Service.
- Selective Dissemination of Information Service - this service is also provided to members only.
- National Collection - This holds local history collections, which can be used for government use and specialised researchers for reference.
- Photocopying services
- Internet Services (for members only)
- Training, Education and status of library personnel.
- Extension service through mobile libraries.

10 Conclusion

To conclude, I have tried to pinpoint the current status of the National Library. I hope to develop the National Library further as possible. In future, I would like to work towards the separation of the National Library from the Public Library to enhance each library to further development and prosperity. I would also like to separate the present section of the Children's library into a separate unit (could be a new building.) May Allah give me the strength to fulfil this wish. Insha Allah!

A Union Catalogue for South Asia

James Nye*

1 Objectives

The Council of South Asia Library Centres in conjunction with the Sundarayya Vignana Kendram and the University of Chicago has inaugurated a self-sustaining program to create a South Asia Union Catalogue of books and periodicals, including newspapers. This program, with first support from the Ford Foundation, will substantially improve the production, distribution, and consumption of scholarship about South Asia. More generally, all elements of South Asian society will be given free access to bibliographic resources of high quality through this program. The Union Catalogue will eventually include publications from the areas encompassed by the current nation-states of Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

The first phase of the Union Catalogue is focused on publications from south India and Sri Lanka. Publications in all modern and classical languages will be encompassed, including those in Persian and Arabic, especially important because of India's role in the nineteenth-century revival of Muslim learning. During the three years support from the Ford Foundation the program will create an on-line bibliography and a union catalogue of holdings. More specifically, the program will:

1. Create bibliographic records for all books and periodicals published in south India and Sri Lanka during the period 1801-1959, a period not well covered through other sources;
2. Distribute those new bibliographic data to the Online Computer Library Centre and South Asian bibliographic databases such as INFLIBNET;
3. Prepare a new site on the World Wide Web containing bibliographic records for South Asian publications with imprints from 1556 through the present for use by scholars and librarians; and

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4. Develop the mechanism for South Asian and other libraries to attach holdings information to the bibliographic records and to upgrade the data on the new Website.

Subsequent phases of the program will focus on publications from other regions of South Asia.

2 Rationale

The most important rationale for creating a union catalogue is that scholarship will be improved and the missions of universities in the region will be advanced. Currently, only a small fraction of South Asian imprints are described with electronic records. It is virtually impossible to discover the full range of what has been published on many South Asian subjects without consulting early printed bibliographies, most of which are extremely rare. Even if one does discover that a publication was produced, it is often exceedingly difficult to locate a holding library. This situation results in inefficient expenditures of researchers' time and degrades the quality of scholarship.

The South Asia Union Catalogue will yield several distinct benefits.

1. This program will have far-reaching consequences for the fabric of scholarship in South Asian countries. Research in the social sciences and humanities is heavily dependent on access to texts and to the record of prior scholarship. There is little capacity to generate new knowledge when those linkages to the printed record are weak. The South Asia Union Catalogue will give researchers a reliable base of information on which to pursue their work. Among other benefits, it will create the backbone required for inter-library loan with libraries inside and outside of South Asia.
2. The union catalogue will enable virtual cross-border connections without the political complications that can cripple collaborations between organisations in adjacent countries. Institutions now separated by national borders and antagonisms in South Asia will be mutually enriched.
3. In South Asia, the program's engagement with colleagues will give impetus to a "new library movement," equipping younger librarians with the required tools and methods for academic librarianship. Program staff will receive training on the job, expanding their expertise. Furthermore, five scholarships will be provided each

year permitting disadvantaged or junior staff to undertake formal degree studies in library science. This approach follows the successful model for staff training established at the Roja Muthiah Research Library.

4. The Union Catalogue will foster a greater awareness of South Asia's large and influential publishing heritage. That heritage is often little appreciated and under-protected even though it was an important force in creation of modern consciousness in the region.
5. The database will serve as a base for future, coordinated efforts to preserve the published cultural patrimony of South Asia. It will be possible to set preservation priorities and make intelligent selection decisions based on specific knowledge about library holdings that will be represented in the South Asia Union Catalogue.
6. The new resource will strengthen institutional capacities in South Asian countries. Information about many of the resources that would be in the proposed union catalogue has not been available easily. This unavailability has often separated the leaders of institutions from the published historical records of their organisations and from sources of knowledge that could improve their performance. Foremost among the institutions to benefit will be those of higher education. Additionally, NGOs, elementary and secondary schools, cultural institutions, government bodies, health care organisations, media, and foreign counterpart institutions will benefit from the free access to information supporting their missions.

3 Background

The objective of universal bibliographic control has been a desideratum since the 1961 International Conference on Cataloguing Principles. As it is depicted by the International Federation of Library Associations and Institutions, each nation assumes responsibility for creating records describing the output of its presses. This objective has yet to be realised for many parts of the world, especially as it relates to retrospective bibliographic control. The absence of universal bibliographic control is particularly noteworthy in the major international bibliographic utilities such as the Online Computer Library Centre (OCLC) and the Research Libraries Information Network (RLIN). Deborah Jakubs and Dan Hazen writing about North American research libraries in a white paper on "Library and

Information Resources for International Education”¹ for the 2003 conference Global Challenges and U. S. Higher Education state, “The continuing challenges of incorporating records for materials in non-Roman scripts within our library catalogues ... complicates the goal of universal bibliographic control. In an ideal world, all library holdings within this country—and beyond—would be fully catalogued, with all the records available through both local online catalogues and bibliographic databases like OCLC’s WorldCat or RLIN.”

The program for a South Asia Union Catalogue is well founded on a base of antecedent programs and pilot projects and capable of establishing retrospective universal bibliographic control for South Asia. In each of these antecedent cases, detailed information exists on the time required for cataloguing and the average expense per bibliographic entry, all of which informs the framework for this program. All of the records created during the prior programs will be made available without charge for incorporation into the South Asia Union Catalogue. Those earlier projects include the following:

- a. *The South Asia and Burma Retrospective Bibliography* – Graham Shaw, a senior member of the British Library staff, published the first phase of the *Bibliography* covering all 1,771 publications from that region produced during 1556-1800. His landmark bibliography includes information on all known holding libraries. As noted in the preface to that publication, “the Eighteenth Century Short Title Catalogue (ESTC) has already shown the enormous benefit and stimulus to scholarship that such pooling of resources and information can bring.” Shaw’s research has brought those same benefits to South Asian scholarship.
- b. *Short-Title Catalogue of Nineteenth-Century Publications from the South Asian Subcontinent* – The Sahitya Akademi conducted a pilot project in 1993 to test the feasibility of creating a short title catalogue and to estimate requirements for creation of a database covering monographs published during the period 1867-1900. An electronic database was created under the leadership of Mr. K. C. Dutt by entering information for 2,000 randomly-selected records from the several listings entitled *Catalogue of Books Printed in the Presidency during the Quarter Ending ...* (abbreviated as *Quarterly Reports*.)² The Sahitya Akademi, in conjunction with the Library of Congress, the Department of Southern Asia at the University of Chicago Library, and the Oriental and India Office

Collections at the British Library conducted the work in New Delhi. The 1991 pilot project proposal to Sahitya Akademi is available at <<http://www.lib.uchicago.edu/e/su/southasia/sahitya-akademi-proposal.pdf>>.

- c. British Library's Oriental and India Office Collections holdings of 19th-century Indian publications – Beginning in 1991, the University of Chicago Library joined with The Oriental and India Office Collections of the British Library to create electronic catalogue records for titles in South Asian languages recorded in the printed catalogues of the British Museum and the India Office Library. More than 40,000 records have been created to date, greatly increasing awareness of these scholarly resources. Please see the on-line database at <<http://dsal.uchicago.edu/cgi-bin/oioc.py>>.
- d. Microfilming of Indian Publications Project – This project is preserving and making accessible all 55,992 books listed in *The National Bibliography of Indian Literature: 1901-1953 (NBIL)* together with the pre-1954 titles in the *NBIL* supplement. An important byproduct of the project is the electronic catalogue records created for all titles in the *NBIL*. The on-line database is available at <<http://dsal.uchicago.edu/cgi-bin/nbil.py>>.
- e. The Roja Muthiah Research Library (RMRL) – The library, founded in 1994, is a collaborative program of MOZHI, a trust based in Chennai, and the University of Chicago. The library houses the private collection of the late Roja Muthiah of Kottaiyur, Tamil Nadu, along with other gift collections acquired over the past nine years. More than 70,000 electronic catalogue records for Tamil publications have been created since the library's founding. Most of the records have been contributed to the OCLC database. Grants from the Ford Foundation and other funding agencies have supported the library since 1995. The Website and full on-line catalogue for the library is available at <<http://www.lib.uchicago.edu/e/su/southasia/rmrl.html>>.
- f. The Library of Congress Field Offices – The offices in New Delhi and Islamabad have created catalogue records for imprints from South Asia since 1960. The program has carefully selected, acquired, and described publications of importance for scholarship. The Field Office maintains a Web site at <<http://www.loc.gov/>>.

acq/ovop/delhi/> with details on its programs and on-line access to many of its resources. The Library of Congress has provided the South Asia Union Catalogue with 311,128 records encompassing all of its catalogued holdings of publications from South Asia.

4 Collaborating Partners

Several participants are involved in the international collaboration for creation of the South Asia Union Catalogue. They include the members of the Council of South Asia Library Centres (CSALC), the Center for South Asia Libraries, the Digital South Asia Library, and the University of Chicago. Program work is coordinated from locations in Hyderabad, Chennai, and Chicago. The Sundarayya Vignana Kendram in Hyderabad is the administrative home for the program's first phase. The Roja Muthiah Research Library, a CSALC member institution situated in Chennai, serves as the base in South Asia for training, quality control, and database management. The Urdu Documentation Centre collaborates with the Urdu Research Centre in work on Urdu publications. The University of Chicago Library, a principal participant in the Digital South Asia Library and the Centre for South Asia Libraries, serves as the U.S. base. Other collaborating partners will be sought during the first phase of the program to encompass language materials in Malayalam, Kannada, and Sinhala. Work during the first phase will extend over a time span of three years.

5 Method of Work

5.1 Bibliographic Records

The South Asia Union Catalogue program creates records which are as complete as possible given the information in hand. Preference is given to cataloguing from sources which permit full descriptive statements. However, if a brief bibliographic description is all that is available from a source such as the *Quarterly Reports*, that data is entered into the database. The brief records hold a place in the Union Catalogue until the data is updated to full cataloguing by a library holding the publication or from a more complete descriptive source. All cataloguing is reviewed by staff to ensure that high standards are met. Specifically, the standards are those of *Anglo-American Cataloguing Rules*, second revised edition, and the Library of Congress *Rule Interpretations*. Program staff are well qualified to meet these standards and are becoming further well qualified through training by the Library of Congress and the Roja Muthiah Research Library. During the second year of the program staff will begin loading the full electronic

catalogue records to OCLC. Those bibliographic data will also be offered to South Asian national databases and individual libraries. Approximately 100,000 new bibliographic records will be loaded to OCLC during the three years of the project.

5.2 Authority Records

Creation of high-quality catalogue records depends on careful examination of personal names and titles to establish standard forms and cross references from variant forms. This authority control is among the most expensive elements in library cataloguing. Authority information must be collected from standard scholarly sources and corroborated by examining the information about works by authors in the union catalogue. Where authority information is available in electronic form from the Library of Congress or OCLC, the South Asia Union Catalogue program utilises it.⁴ However, where the authority records do not exist, new records are created. Prepared to the standards of *Anglo-American Cataloguing Rules*, second revised edition, and the *Library of Congress Rule Interpretations*, these name and uniform title authority records contain the established entry along with dates of birth and death or period when the person flourished, if known; cross-references; notes on sources consulted in establishing the standard form and its cross-references; and other necessary information.

These authority records will be a useful complement to the electronic bibliographic records created during the program. Making the results of the authority work available internationally also reduces costs for other cataloguing projects in South Asia and abroad. The authority records for personal names, corporate bodies, and uniform titles will be contributed to the Library of Congress via the New Delhi Field Office. We expect that these will subsequently be distributed on the Library of Congress Cataloguing Distribution Service files of name authorities. Precise details covering transfer of records to the Library of Congress are under discussion.

5.3 Evaluation Plan

Evaluation of bibliographic data for accuracy will take place regularly during the program. Statistical data on rates of error will be compared with those from the Library of Congress Field Office in New Delhi. Because of the measures taken during the program for control of quality, we expect that the error rate will not exceed those from the LC Field Office in New Delhi or the OCLC Retrospective Conversion Services Department.⁵ The procedures for evaluation of data are those used by the Library of Congress Field Office in New Delhi.

6 Leadership

A Governing Board is responsible for the South Asia Union Catalogue. Members, equally divided between representatives from within and outside of South Asia, include:

- S. Theodore Baskaran, Country Representative for India, Council of South Asia Library Centres;
- David Magier, Director of Area Studies, Columbia University Libraries and President of the Centre for South Asia Libraries;
- Anwar Moazzam, Honorary Director, Urdu Documentation Centre;
- Atlury Murali, Professor of History, University of Hyderabad and Co-Principal Investigator for the Ford Foundation grant;
- James Nye, Bibliographer for Southern Asia, University of Chicago and Co-Principal Investigator for the Ford Foundation grant;
- Mary Rader, South Asia Bibliographer, University of Michigan;
- Bernard Reilly, President of the Center for Research Libraries and Vice-President of the Centre for South Asia Libraries;
- Graham Shaw, Director, Oriental and India Office Collections at the British Library;
- G. Sundar, Acting Director, Roja Muthiah Research Library; and
- Shalini Urs, Professor, Department of Library and Information Science, University of Mysore.

7 Sources of Support

The Ford Foundation made a three-year grant for the program late in 2003. Funding is provided under the grant for staff, equipment, advanced cataloging training for staff, and support for ten scholarships each year to enable junior staff to enrol in library science degree programs.

The University of Chicago has begun to prepare two complementary proposals to create a database from the *Quarterly Reports* mentioned in antecedent project b) above. Those proposals will focus on the *Quarterly Reports* – one on the eastern portion of northern India and the other on the western portion of northern India. One will be submitted to the Reference Materials section of the National Endowment for the Humanities (NEH) and the other will either go to the U.S. Department of Education or The

John D. and Catherine T. MacArthur Foundation. The two complementary proposals would also include components addressing the addition of library holding symbols to those bibliographic data from the *Quarterly Reports*. A grant from the Ford Foundation would constitute a portion of the matching funds required by NEH.

Appendix

The Consortium for the First Phase

Sundarayya Vignana Kendram applied for the grant from the Ford Foundation on behalf of a consortium consisting of the members of the Council of South Asia Library Centres with locations in southern India or substantial interests in that region of the subcontinent. Those members include the Roja Muthiah Research Library, the Urdu Research Centre, the Sundarayya Grandalaya Samstha, the Urdu Documentation Centre, the Center for South Asia Libraries, and the University of Chicago Library. Additional members will be added to the consortium during the grant to assist in cataloging materials in other languages of southern India and Sri Lanka. The first additional members will be sought for Kannada, Malayalam, and Sinhala.

The following are brief statements on members of the consortium which will have key roles in the implementation of the South Asia Union Catalogue's first phase. They include the Sundarayya Vignana Kendram, the Roja Muthiah Research Library, the Centre for South Asia Libraries, and the University of Chicago Library.

The Sundarayya Vignana Kendram (SVK) <<http://dsal.uchicago.edu/bibliographic/urlc/svabout.html>> was constituted as a trust under the Public Trust Act in 1985 in memory of the late Sri Putchalapalli Sundarayya, a renowned national liberation fighter. In addition to many other activities, the Sundarayya Vignana Kendram has a rich collection of more than 125,000 rare books, journals, newspapers, reports, pamphlets, manuscripts, private papers, and other materials in several languages. The collection is particularly rich in Telugu, Urdu, and English language material throwing light on socio-cultural, economic and political histories, and popular movements of all types in central India from the twelfth through twentieth centuries.

The Sundarayya Grandalaya Samstha is home to most of the Telugu and English publications held by SVK. That collection was built over more

than two decades through the incorporation of gift collections containing early imprints and the purchase of contemporary publications. In 1996 the Urdu Research Library Consortium, a group composed of leading U. S. research libraries, approached SVK to collaborate on the preservation, documentation, and maintenance of Mr. Abdus Samad Khan's private collection called the Urdu Research Centre, one of the world's finest collections of Urdu periodicals and books. Placement of the Urdu collection at SVK was appropriate because of SVK's record in supporting the growth of Hindu-Muslim cooperation and communal harmony.

The dedication and agility of SVK were amply demonstrated following a devastating flood in August 2000 which inundated the libraries. (Please see <<http://dsal.uchicago.edu/flood/>> for more details.) Not only have all of the collections been fully restored, but SVK also used the opportunity presented by visiting international conservation experts during the restoration to conduct a national workshop for librarians, archivists, and conservationists on techniques for salvaging and restoring water-damaged publications. More recently that passion for libraries and archives has exhibited itself in an effort to survey the oldest libraries of Andhra Pradesh and in laying a plan for assisting in cataloguing and preserving those libraries in villages and small towns.

The Roja Muthiah Research Library (RMRL) <<http://www.lib.uchicago.edu/e/su/southasia/rmrl.html>>, founded in 1994, exists to provide research materials and facilities for students of Tamil studies in a variety of fields spanning the humanities, social sciences, and sciences. RMRL was created by MOZHI, a research and documentation centre functioning as a public trust dedicated to developing resources in languages and culture, and the University of Chicago Library. RMRL's main objectives are to preserve, catalogue and expand the collection of Roja Muthiah, who during his lifetime amassed one of the world's finest private libraries of Tamil publications. Located in Chennai, the Library was opened early in 1996 to research scholars working with Tamil language materials. The RMRL catalogue has been available since 1995 through a site on the World Wide Web.

A skilled and dedicated staff of eighteen professional librarians and paraprofessionals works to preserve, catalogue, and guide readers in use of RMRL. Tools at their disposal in this work include: a spacious reading room; an extensive reference collection, including encyclopedias and other general reference publications; photoduplication machines (primarily for administrative use); twelve networked computers linked to a database with

RMRL holdings (with all computers capable of display in Indic characters); Internet access; compact disks containing all available electronic records for holdings at the Library of Congress; microfilm reading equipment; a Wicks and Wilson microfilm scanner; and a fully equipped reprographics facility with three microfilm cameras, a film duplicator, film processor, and equipment for assessing quality of microfilm.

The Center for South Asia Libraries (CSAL) <<http://dsal.uchicago.edu/csdl/>> is a not-for-profit corporation based in Chicago. Its mission is to foster the identification, documentation, and preservation of research materials for South Asian studies and to facilitate their accessibility and exchange for the benefit of scholarship on South Asia world-wide.

CSAL is based upon the principle of mutual benefit to U.S. and South Asian scholars. Consonant with that objective, CSAL works with research centres, universities, libraries and archives throughout South Asia to preserve important local resources (usually by microfilming), to provide full bibliographic access (by cataloging, article indexing, and other means), and to prepare them for full-text or full-image delivery over the Internet. Unlike other approaches based on acquisition, CSAL's *modus operandi* allows the original research materials to remain in South Asia for the benefit of local scholars, while the information products of CSAL's activities are disseminated over the Web for research use by scholars in the U.S. and elsewhere. In a typical example, CSAL works with the Madan Puraskar Pustakalaya (our research centre partner in Kathmandu) to preserve unique Nepali newspaper holdings on microfilm. The master negatives of the film are shipped to CSAL's facility at the Roja Muthiah Research Library in Madras, where trained staff make duplicates of the film for dissemination, produce complete cataloging records, and run the microfilm through a film scanner to produce digital copies of the entire corpus of material. The original master negatives, positive use copies, and a CD-ROM containing the digital data (full-text images) are sent back to Kathmandu for use by local and American scholars working in Nepal. Another copy of the film is archived in the U.S. at SAMP (South Asia Microform Project, at the Centre for Research Libraries, Chicago), and the digital data is mounted on the Web for global access.

The University of Chicago Library's century-long commitment to South Asia has produced a collection worthy of the University's role as a leader in international scholarship. The South Asia collection <<http://www.lib.uchicago.edu/e/su/southasia/>> has the further advantage of being part of one of America's finest research libraries. The Library's leadership in

South Asian studies can be measured in the ambitious collection program, abundant services to readers, strength of staff, efficient provision of inter-library loans, and imaginative projects to further scholarship.

The Library's commitment to South Asia is part of a wider dedication to area studies at the University of Chicago. Together with its South Asia holdings, the collection of materials on Southeast Asia, East Asia, Eastern Europe, Latin America, Africa, and the Middle East amount to more than 3,040,000 volumes and comprise one of the world's great resources for area studies. These collections and their support by faculty and staff allow cross-cultural and cross-regional scholarship on topics such as Islamic studies, where the sources and issues cut across all of Asia as well as other regions.

The Library supports scholarship on virtually all topics related to South Asia through an ambitious program of collecting contemporary materials that complement the foundation of a century of collection development. More than 590,500 volumes comprise the South Asia collection. There are 366,455 volumes of books and 224,072 volumes of serials in more than thirty languages of the South Asian subcontinent. The Library also holds more than 10,400 sheet maps and a vast array of photographs, posters, and audio and video recordings on South Asia. The University of Chicago is the only library in the U.S. to collect in all languages of the region. The collection is widely regarded as the most comprehensive university library collection of South Asia materials in North America.

Extensive services are provided to readers and institutions beyond the University. Because Chicago collects from opposing sides of political divisions, scholars from the subcontinent visit the collection to consult materials that are difficult or impossible to obtain under prevailing political circumstances. In addition, requests to explore the collection from scholars from across America and throughout the world are routinely accommodated. Two recent initiatives based at the University augment services to readers off campus. Those are the Digital Dictionaries of South Asia – creating thirty-four electronic dictionaries under grant support from US/ED – and the Digital South Asia Library. These collaborative programs have been awarded recent grants totaling more than \$2,100,000. As their titles suggest, they are providing critical tools for scholarship to researchers over the Internet: dictionaries, texts, maps, statistical data, photographs, and indexes.

Digital Handling of National Library Resources

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In the digital world, libraries are emerging as means of creation and dissemination of knowledge. Libraries traditionally have formed a preservation safety net for materials that will be transmitted to subsequent generations of information seekers and scholars. For paper-based documents, provision of adequate storage conditions was the best means to help ensure that materials would remain readable far into the future. The digital library requires searching, sorting and knowledge management strategies for maintaining / updating the resources

This paper describes challenges in knowledge management, technological growth, issues and standards in Digital Library creation. This paper tries to explore solutions to the various impediments imposed in the process of digital handling of library resources.

1 Introduction

The past two decades have witnessed tremendous social, economic, and institutional change for all sectors of higher education, including the research library community. However, libraries face significant challenges in responding to changes being forced by technology while sustaining their traditional functions.

The explosion of information technology has resulted in powerful competitive forces that raise fundamental questions about the role of libraries and librarians.

- Have the capabilities of the Internet and new information services given rise to credible competitors?
- Are libraries at risk of becoming irrelevant, or is the librarian's expertise more critical than ever?
- Can the basic functions of libraries be maintained in a distributed information environment, or will totally new functions emerge?

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The roles emerging through this evolution are based in part on extrapolations of existing functions, yet they also represent fundamentally new roles for academic libraries. There are changes reflected in the library's shift from:

- Emphasising the value of collections to emphasising the value of expertise
- Supporting information description and access to taking responsibility for greater information analysis
- Serving as a support agency to serving as a collaborator

2 Impact of Distributed Technologies on Library Handling

Technology development like

- The evolution and emergence of content standards and
- The mature and intelligent systems have contributed significantly to shaping the opportunities for libraries.

These developments have progressed as the distributed environment has taken shape and continues to enable new capabilities for libraries.

2.1 Evolution and Emergence of Standards

The evolving standards for creating, structuring, and disseminating digital content has allowed libraries to make a shift from proprietary methods of information access and management that characterised the early days of electronic information. As libraries gained experience with new methods of delivering content and the new genre of digital collections, standards were embraced and integrated into library operations. Distributed computing and the emergence of standards was a critical step towards achieving a more unified information environment and interoperability among distributed collections and content providers. These standards have offered libraries new opportunities for handling content (e.g., to add functionality, deliver content differently for different audiences, or to sustain digital collections over time) and for enhancing the library's classic roles in information access and preservation.

2.2 Matured Tools and Systems

Intelligent tools and systems act as powerful invisible mediator between content and user. They facilitate forms of information accessing and analysis.

These developments may make us believe that libraries have become irrelevant, since system capabilities can perform mediation functions previously provided by libraries, involving human beings. However, libraries can make use of these system capabilities to build far more robust

and useful information environments. The challenge is to make resources seamless without making the library's role invisible.

3 Digitalisation of Library for Knowledge Dissemination

The knowledge dissemination is an integral part of the success story of popularity of creating digital libraries. The aim is to provide universal access to human knowledge, and given the advancement of digital storage and communications this goal is now achievable.

3.1 Distributed Models

Libraries are increasingly adopting distributed models for information access and management, and more often use open and collaborative models for developing library content and services. With the incorporation of open models and distributed technologies, the libraries have the potential to get more involved in knowledge creation, dissemination, and use.

In reference to libraries, the creation and dissemination of knowledge—in ways that represent the library's contributions more broadly and that intertwine the library with the other stakeholders in these activities. The library becomes a collaborator within the academy, yet retains its distinct identity.

3.2 Open Paradigms and Models

There is a new trend emerging as Open Source movement—the concept of collaborative software development with developers sharing the source code—reflects a fundamental shift away from proprietary software and systems.

These open models are appearing in new applications areas such as the Open Knowledge Initiative to share learning technologies. The increasing interest in open models is leading towards more generalised acceptance of collaborative development and sharing of intellectual goods and services. Cyber law experts suggest that the creation of a “commons,” wherein the free exchange of ideas and collaboration prevail, is fundamental to an open society.

Themes of openness and collaborative exchange have also emerged in the context of publishing, particularly with respect to the relationship between authors and commercial publishers. As information becomes more distributed and open models of exchange become more common, the library's relationship with content creators, publishers, and consumers will change. In these open trends there is evidence of a shift from publication as product to publication as process.

When content is available in such a shape that can be enhanced or supplemented over time, it becomes more dynamic and the “versions” become more cumulative. Few people forecast this shift as the ultimate challenge to current copyright law. Such a shift will have a significant impact on organisations whose current role is to manage publications in both traditional and digital forms. As this shift continues, there are likely to be further changes in the library’s information management functions.

In this second phase in the evolution of library roles, the library starts to engage in collaboration as a strategy to address its core mission of building collections, maintaining access, and providing service. As responsibilities for content and services become more distributed, models of central control give way to new mechanisms for coordination and collaboration. Ultimately, the processes of scholarly communication become as critical as traditional publication products.

3.3 Digital Collections vs Digital Library

In the last decade substantial progress has been made in creating large-scale digital collections. It is extremely important to distinguish digital collections from digital libraries. There is no clear definition about what exactly constitutes a digital library.

Digital collections are “raw content,” while “digital libraries [are] the systems that make digital collections come alive, make it usefully accessible, useful for accomplishing work, and connect them with communities.” The collections gain value only when these are surrounded by a matrix of content and interpretation that makes them useful. Therefore it should be ascertained that we develop digital libraries, not just digital collections.

Care should be taken to surround collections with appropriate metadata supplying context and interpretation, to develop synergy.

It is the time to “build massive, comprehensive digital collections that scholars, students, and other researchers can use with more ease than they use the book-based collections.”

Three general characteristics of the digital library of the future are:

- A comprehensive collection of resources important for scholarship, teaching, and learning;
- Readily accessible to all types of users
- Managed and maintained by professionals

4 Issues in Digital Library

4.1 Handling of Documents in digitisation Process

Digital collection process may include digitisation of entities such as books, palm leaves, cloths, maps, manuscripts, periodicals (journals, newspapers), music, opera, dance, paintings, sculptures and monuments, movies, video, databases, software.

In digitising libraries, there may be several rare documents and manuscripts of value which may need careful handling while scanning. The documents/manuscripts may be available as a single copy which means that if a part of paper is damaged it will cause severe loss of knowledge which is irrecoverable.

4.2 Preservation

One of the biggest impediments to the long-term development of a digital library is the issue of preservation of digital materials. The librarians are quite familiar with the overall issue of preservation of library collections in the traditional sense. Usually this approach focuses on the difficult but concrete concerns over preserving physical objects, such as paper documents, or reformatting them in a proven preservation medium so that the information can be maintained indefinitely.

Networked digital information technology is very good at transmitting data across space, but is not well suited for transmitting data across time. The evanescence of the medium creates many difficulties.

There is the problem of the lack of fixity in digital media. One of the greatest advances occasioned by the advent of typography was that readers of a document were sure that they were all reading the same document (more or less). The advent of fixity facilitated a major advance in scholarly communication.

In a digital medium, that fixity is lost. One can have no assurance that a digital text conveys the original expression of an author. It may have been altered, intentionally or unintentionally. As now there are many document presentation schemes, we have even lost the reliability of citation formulas.

Apart from fixity, there is problem of fragility of the media. Random access memory (RAM) is completely evanescent and transitory. Digital files are mostly stored on magnetic media. The media becomes unstable if it is not refreshed on a regular basis. The longevity of other media for digital storage (CDs) remains uncertain, as they can be less stable than paper codices stored in an appropriate environment.

Therefore, these problems, which are foreseen in future, may be addressed properly with an underlying technology solution.

4.3 Copyright

One of the greatest impediments to realising the potential of universal access to digital collections is our current system of protecting IPR. Transferring the concepts of copyright to the digital arena, however, raises numerous problems. In the manuscript era, there was no notion of intellectual property rights.

Indeed, copyright arose only after the advent of typographic printing that made it possible to produce manifold copies of a text quickly and cheaply, and that created an economic stake for the author as well as the publisher. The purpose of the copyright law remains “to promote the progress of Science and useful Arts”: that is, to promote a social good.

Digital technology, though, raises complex and perturbing questions about these rights and about the very nature of copying and reproducing copyrighted material. In the digital arena, it is very easy to make and distribute widely unauthorised copies of protected material. The content industry and rights holders, as a result, have tried many different approaches to fill the gaps that digital technology has created in our structure of protections.

4.3.1 Proposed Methodologies for Digital Copyright

One proposed way to recognise copyright in digital media would be to mark all commercial digital content with a string of bits or with watermark technology. Developing mechanisms to find and read the marks, however, would require a broad range of technological innovations. Such marking technologies would need to be standardised and might require government regulation. Large segments of the information technology, consumer electronics, and communications industries would have to radically restructure their products to incorporate the technology.

Another proposal is to make many classes of hardware and software difficult to modify, or “closed.” But most recent technical innovation has been fostered by open platforms such as the PC and the Internet. The Internet as we now know it, the World Wide Web, Linux and other open-source software, and graphical browsers have all resulted from innovation made possible by open systems.

Indeed, such limitations would alter the very nature of the Internet as we know it. The Internet was developed to provide a mechanism for computers to share data on a distributed, decentralised network.

Computers copy data constantly, from one part of RAM to another, from RAM to magnetic storage and back again, from RAM or storage to video displays, and so on. Digital copying is the very foundation of the Internet, in which data are typically divided into "packets," which are then copied and recopied from computer to computer until reproductions of all the packets reach the destination computer and are reunited into a perfect copy of the transmitted information.

Copyright has many useful elements but until a workable approach to addressing IPR is developed, we will not be able to realise the potential of digital libraries.

5 Digital Library: Standards and Best Practices

There are different efforts made at several places for digital collections and digital library. For sharing the digital library efforts at various places it is a must that the digital library creation from the beginning itself follows some standards and best practices.

A few examples of the above are listed below:

5.1 Metadata Encoding and Transmission Standard

During the past few years, the DLF (Digital Library Federation) has supported work on mechanisms for describing technical, structural, and administrative characteristics of digital objects.

Metadata is not a new concept; it has existed in the computer science field for decades, and refers to information about electronic computer files. Metadata is now used to refer to information about any digital object that exists on the Internet. The need for certain types of data (such as creation date, file size, etc.) might seem obvious if one is managing a large group of digital objects merely as files.

Metadata may manifest itself either as an embedded, integral part of the digital object, to be retrieved and manipulated for various purposes, or it may exist externally from the digital object.

Metadata is often broken into three broad categories:

Descriptive Metadata: Conveys some sense of intellectual content and context.

Structural Metadata: Describes the attributes of an object, such as size, electronic format, etc.

Administrative Metadata: Information related to rights management, creation date of digital resource, hardware configuration, etc.

5.2 Benchmarking Digital Reproductions

Libraries and others are digitising increasing quantities of printed material for online access without agreement on any desirable level of imaging quality. The DLF has identified and endorsed a specification that its members deem acceptable as the minimum necessary for digitally reformatted monographs and serials intended as faithful reproductions of the underlying source materials. The benchmark focuses largely on format specifications. It is also currently reviewing a specification of the functions a digital master must minimally support, as a means of providing guidance about what metadata must be associated with it. Widespread adoption of the benchmark will help users and libraries alike. Users will have more confidence in the fidelity of digital reproductions that are available to them. And libraries will produce and maintain reproductions with confidence that expensive re-digitisation will not become necessary. Digital reproductions meeting at least the benchmarks' minimum specifications will remain viable even as reproduction techniques improved. Also, because such objects will have well-known, consistent properties, they will support a wide variety of uses (including uses not possible with printed texts). Additionally, widespread adoption of the benchmark is an essential first step for libraries that wish to investigate whether they can manage and preserve print materials more effectively by relying more heavily on digital reproductions for access.

5.3 Licensing Agreement

There should be license agreement after consensus on the basic terms of contracts to license digital information between university libraries and academic publishers. The draft license agreement can then be sent to information publishers to serve as the basis for further negotiations for license agreements with acceptable terms.

5.4 TEI (Text Encoding Initiatives)

TEI Guidelines and particularly "best practices" for the encoding of electronic texts developed for different purposes are now available under Text Encoding Initiative (TEI) and XML in libraries. The guidelines have been endorsed by DGF and are in use by leading text centres in the US and Europe.

5.5 Interoperability

Interoperability is the ability of two or more systems to exchange information and to use the information that has been exchanged. There are a number of strategies that promote interoperability between multiple systems,

but the simplest strategy is that operators of each system employ similar data structures and utilise similar or identical semantics and vocabularies.

Achieving interoperability between two systems will require coordination on two levels:

5.5.1 Establishing a Common Mapping between the Fields each System Uses to Hold Subject Terms for each Record.

System owners should agree to simply change this field to a common name used, or they can alternatively decide to keep their respective data structures, and build a “map” that equates these and other similar data fields. When exchanging information, each system owner would then know what type of information would be found in this field.

5.5.2 Providing Some Means for Equating the Related Subjects

Owners of systems cannot guarantee users full retrieval of relevant content until some agreement is arrived at on how to address differences in descriptive metadata.

Obviously, the second aspect of interoperability, semantic and taxonomic compatibility, is the more difficult task. Certainly, consistently utilising standardised vocabularies and Thesaurus is a good first step. Documentation of utilised vocabularies is an essential aspect of managing large information systems. In the real world, full semantic and taxonomic interoperability across diverse systems with diverse content is impossible. Different factors such as descriptive needs, the granularity of description, and intended use of information, dictate that every system may not be fully mappable to another system. However, by documenting employed data structure and content standards, owners of any system can still promote eventual interoperability at some level with other systems.

5.6 Controlled Vocabularies

Content data for some elements, such as the subject element, may be selected from a “controlled vocabulary,” a limited set of consistently used and carefully defined terms. Using terminology from a controlled vocabulary ensures consistency and can improve the quality of search results, and may also reduce the likelihood of spelling errors when recording metadata. The description of each element indicates whether content should be selected from a controlled vocabulary, if possible.

5.7 Other Major Efforts in Standards and Best Practices

- Standards for electronic resource management
- Cataloguing Standards for Describing Cultural Objects and Images

- Methods to evaluate the quality of images and imaging systems
- The Open Archives Initiative.
- Z39.50: an international standard search and retrieval protocol that has been widely adopted by libraries as a means of integrating access to information maintained in distributed databases.

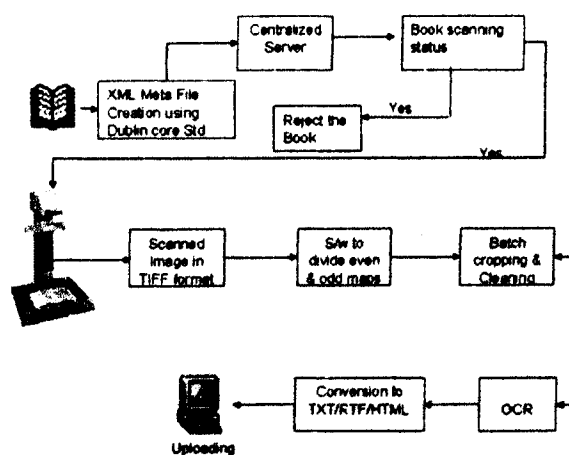
6 Process of Digital Archival

Digital reproductions are just a reformatting technology. It is rarely intended to replace the original item, except when that item would disintegrate on its own accord. Even so, a high-quality digital reproduction can help preserve the original by removing it from excessive handling or casual use. In such cases, scanning should strive to capture the essence of the item in terms of detail and colour fidelity, as well as information about the original and its digital surrogate.

There are no accepted standards for “archival” scanning, although plenty of guidelines. Most guidelines are designed to practically capture the greatest amount of detail relevant to the image. Most high-resolution images are stored off-line because of their size (easily 50MB in the case of a 600 pixel per inch scan at 24-bit colour) and the relatively low throughput of the Web.

The most underestimated expense of scanning is capturing information about the scan (metadata), as well as providing adequate descriptive information about the image. With no established metadata requirements, and virtually no software to connect everything together, the descriptive process may turn out to be the most expensive part of a scanning project.

The figure below explains digitisation process details:



7 Acknowledgements

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8 Conclusion

For exploiting the benefits of Digital Library, a need is being felt for evolving methodologies for IPR control and standards. Metadata schema needs to be adapted for use of National Libraries in the Indian subcontinent. Translation/ transliteration of metadata may also be attempted for cross language information retrieval

Translation of abstract and full content may also be included with digitised data. Tools such as automatic text summarisation and Information retrieval based on semantic indexing should be taken on priority for Indic knowledge.

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The National Library of India: Need for a New Strategy

P. Jayarajan*

Libraries all over the world are going through a major change due to the application of new technologies. The National Library of India too is undergoing such a change. Along with the introduction of this change, it is time for the National Library to re-visit its aims and objectives. The paper suggests that the National Library should develop a new strategy focusing on “services”, moving away from the current focus on “collection development”

1 Introduction

What is the most important aspect of the National Library of India? The answer to this question could be different from different people, e.g.: the imposing historic building and the state-of-the-art new building, the excellent location and sprawling campus, the rich and rare collection etc. It is highly doubtful if anyone would say “services offered by the library”, at least I have never heard any one saying so. Probably, this is the weakest link of the National Library. The campus, building and collection become important only if the list also includes “services”. The single most significant factor that can upgrade the profile of any library is “services”.

2 The Missing Link

Library services cannot be improved overnight, and it does not happen automatically. This is particularly so in the case of a large and old library such as the National Library. A carefully articulated strategy, adequate resources, an effective management structure, a team of motivated staff with appropriate skills and competencies, information and communication technology application are some of the key ingredients that can facilitate the improvement to the quality of services of the National Library.

The Library needs to have a vision and this vision should be more service-centred: what services it wants to offer and what role it wants to play, which would enhance the reputation of the nation and contribute to

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its growth? It is not difficult to articulate such a vision statement, there are many good practices happening in National Libraries around the world and one could get clues from these. If one examines the existing aims of the library, the focus is on collection development. Collection development is very important especially for a National Library. But that should not be seen as the end. That is only a means, the end is offering high quality and useful service to the community of users in India, thereby facilitating the enhancement of India's share of scholarship. Indeed the collection plays a key role in this act. The National Library needs to re-write its aims and objectives, moving away from collection development focus to "service to users" focus.

3 Need for a New Strategy

It is the right time for the National Library to re-orient its focus. The Government of India is going all out to improve library services in the country. It has already initiated many programmes in this direction. The recently held International Conference on Digital Libraries held in Delhi and the draft recommendations from that Conference are good examples. The National Library, the apex library in the country, should be in a position to lead this initiative of the Government. As already mentioned the National Library has already started many major modernisation programmes. It should now consolidate all these, articulate a new strategy and a set of objectives and then draw a time bound road map to achieve the stated objectives. A new commitment to offer high quality service to the users is the need of the hour. The National Library should inspire the large number of other libraries in the country, public libraries especially and it should prepare itself to take on such a leadership role.

4 Components of the New Strategy

4.1 Collection of Documents

As already mentioned, the new vision and strategy should focus on "user services", the ultimate aim of the Library. For this a comprehensive and relevant collection of documents is most important. Probably the Library already has it. If not, it should take urgent steps to fill the gaps. Alongside it should also revise its collection management policy to ensure that it reflects the new vision and strategy.

4.2 Organisation of Documents

Effective organisation of available documents is equally important as holding an excellent collection. The manner in which this collection is

arranged, sign-posted, shelf order maintained, classified, catalogued, etc will have major implications on the quality of service. Nothing should be treated as trivial, in a library even the routine tasks are crucial from the user's point of view.

4.3 Catalogue of Holdings

No library, including any National Library, can claim to be self-sufficient in its collection. To supplement its collection, it should have arrangements with other National Libraries of the world for inter-lending or for accessing material that are in digital format.

The National Library has already initiated a major programme to retro-convert its catalogue. Once this major work is completed, it is hoped that the catalogue will be accessible to anyone from anywhere, thus bringing the rich collection of the National Library visible to the world. Such an online catalogue, besides helping individual users within India and outside India, will also be useful to libraries outside India, including National Libraries, for book selection and resource sharing purposes.

4.4 Promoting Indian Publications Abroad

The online catalogue of the National Library can be an effective medium for promoting Indian publications outside India. A perusal of the "Catalogues of the National Libraries in the World", maintained by the Library of the University of Queensland, reveals interesting facts on the availability of books on India. For example, the National Library of Jamaica has only one book on India, but of Portugal has about 1400. A timely updated online catalogue on the Web, and effective promotion of the Catalogue among the National Libraries around the world, is very likely to result in libraries procuring more Indian publications. This would be much appreciated by the Indian publishing industry. The introduction to the Queensland University Library site states "... the Catalogue of a National Library is the best guide to publications issued in the country in question, and anyone wanting information on the publications of that country should make the catalogue of the National Library the starting point of the search."

5 Showcasing the Rare Collection

The National Library has a unique collection of rare documents, which includes many 17th and 18th century publications. This collection could be a highly valuable one for scholars and researchers not only in India but all over the world. For want of an online catalogue many potential users of

its growth? It is not difficult to articulate such a vision statement, there are many good practices happening in National Libraries around the world and one could get clues from these. If one examines the existing aims of the library, the focus is on collection development. Collection development is very important especially for a National Library. But that should not be seen as the end. That is only a means, the end is offering high quality and useful service to the community of users in India, thereby facilitating the enhancement of India's share of scholarship. Indeed the collection plays a key role in this act. The National Library needs to re-write its aims and objectives, moving away from collection development focus to "service to users" focus.

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this collection may not be even aware of the existence of such valuable books in India. Once the retro-conversion work is completed and the records available for online searching, this problem will be resolved.

The digitisation project, once completed, would enable users from all over the world to see the full text of the rare books and make use of these from anywhere. The National Library can formulate its own policy on controlling access to these rare documents. For example, it may not like to offer free access to the full text. Instead it may only offer the contents page or synopsis of the books and expect scholars to visit the National Library for accessing the full text. The digital versions of the rare documents once promoted, marketed and showcased would certainly develop a new interest in India among scholars from all over the world.

6 Presentation of the Library

Having a good building and an excellent collection are not good enough. The presentation of the library is equally important. Most libraries in India, including the National Library, fail on this account. The layout of the library, the furniture, lighting, signage, shelf order, cleanliness, creative exhibitions and displays, book-centric innovative activities, user-friendly systems and procedures, effective deployment of technology and, above all, committed and helpful staff are some of the ingredients that can help to bring more users to the Library, to ensure a high quality service to its users and finally to upgrade the profile of the Library.

7 Marketing of National Library Services

Once the National Library re-organises its collection and services, it should take all possible steps to market itself, both within India and outside. The Library may even consider having a proper marketing department, employing professionals. Re-organising the Library is a costly exercise and the re-organisation should result in better and more use of the services.

8 Staffing Implications

It is only the staff who can make all these happen. What is needed is a highly motivated and committed team, with the right kind of skills and competencies. Library and information work are undergoing major changes: what was learned a few years ago is no more relevant. To be an effective librarian, one needs a mix of skills: library skills, management skills and technology application skills. Staff at every level should be given opportunities to acquire new skills and to upgrade their existing skills on a

regular basis. The Library may even operate an in-house training facility. Besides using this facility for in-house application, it can be thrown open for training library staff all over the country.

9 Conclusion

The National Library of India, while modernising and re-organising its activities should make concerted efforts to drastically improve its services to users. It should consolidate all the new initiatives that are in progress and come out with a new vision and a new strategy. The re-organised National Library should lead the rest of the public libraries in the country, and also play a key role in the development of other library systems in India.

National Library Services

David Sargsyan*

1 Introduction

The National Library of Armenia is the largest for the preservation and study of Armenian books printed since 1512. It is a nation-wide institution and the principal state library, which serves the information needs of the citizens of the Republic of Armenia.

Beginning in the 1920s the Library began acquisitions through purchase and subscription thus enhancing and developing its collections on the basis of private libraries of famous Armenian cultural and public personalities and institutions.

2 Main Objectives

Among its main objectives may be noted the acquisition, preservation of information related to written (printed) materials published in Armenia and abroad, in the fields of Armenology and Armenian Studies as well as great scientific and cultural works published in other countries.

3 Activities and Services

The following may be covered as the activities and services of the National Library of Armenia:

The collection, cataloguing, conservation and access to documents; collection of library and information science literature as well as dissertations; the Library holds and keeps up-to-date a collection of foreign literature covering all branches of human knowledge.

The creation and publication of the current and retrospective Armenian National Bibliography.

Cooperation with national and other major libraries abroad and individuals, mainly on the basis of interlibrary loan and international exchange of publications.

* Director, National Library of Armenia

National Library of Armenia obtains the status of deposit library for publications issued by the World Bank and United Nations Organisations.

Besides the Humanities, Science and Technology Sections, the Current Periodicals Readers, Room reader services are also available in the Information and Bibliographic, Fine Arts, Music, Cartography, Computer, Dissertations and Library Science Reading Rooms.

Since 1998 the Internet Centre has offered the Internet Access and Training Program (IATP), funded and administered by the International Research and Exchange Board (IREX).

The Library organises more than 100 book exhibitions annually. It also organises book discussions, reviews, meetings with authors and other events honouring notable personalities in the fields of education, culture, etc. Today, the National Library of Armenia experiences a period of changes. It has recently begun the automation process of its book funds.

The National Library of Armenia is trying to transmit to new generations the legacy it has inherited from the past.

Fossilising for the Future: Scoping the Role of the National Libraries in the Digital Domain

Shalini R. Urs*

1 Introduction

To say that the world of information is changing rapidly is to state the obvious, everyone knows. However, in our boredom with that clichéd expression, we ought to remind ourselves that it is not an aphorism but a reality and appropriate policy frameworks are to be evolved and a suitable action plan is to be in place to confront the challenges of the digital domain. Otherwise we run the risk of doing too little, too late. Libraries, the institutions that have evolved in response to the demands of the society are perhaps one of those institutions that have been impacted by the dramatic changes like no other institutions. Libraries have not only evolved but also have metamorphosed as a consequence of two major forces– the technology push and the need pull, as with most of scenarios in this society.

2 Context

Three watershed technologies that have been responsible for the paradigmatic shifts in the libraries are– the invention of writing; the invention of printing press, the development of digital computers and networking technologies. The invention of writing liberated the human civilisation from its dependence on human memories to archive and transfer knowledge from one generation to another. The very beginning of libraries as institutions serving as public memories complementing and augmenting the human individual memories was made possible by the invention of writing. The easy replication of written materials afforded by the printing technologies shifted the focus of libraries from preservation and conservation to organisation and dissemination. The Information and Communication Technologies (ICTs) have been responsible for the next big paradigmatic shift in the information domain. The landscape of creating, storing, distributing and delivering information which had evolved over five hundred

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years since the Gutenberg has been transformed into a highly dynamic and ever changing one. The changes have been rapid and powerful. The scenario is of one both exciting possibilities as well as trepidation among all those concerned with intellectual and cultural memories. The roles and responsibilities of libraries are not only shaped by the things to come but libraries have to help shape the fate of digital domain.

The role of libraries has remained fundamentally the same, though the responsibilities and the processes and technologies have transformed over the years. For centuries, at least as early as the founding of the library at Alexandria (circa 280 BC), readers in pursuit of knowledge have expected libraries to gather and make available to them a broad range of texts and artifacts. In every age, these creations have been conveyed by the media of the time: handmade tablets, leaves, scrolls, codices, and then, with the advent of printing, books and journals (1). Libraries have always been the agencies for collecting, housing, preserving and facilitating access to informational materials. These roles have been accomplished through a process of selecting, aggregating, organising, maintaining information resources and providing a variety of services as shared public good.

3 National Libraries and Digital Era

The role of National Libraries in archiving and preserving the nation's intellectual heritage cannot be overemphasised. This traditional role of the National Library is further accentuated in the digital domain as one of the vital one, in view of the transient and volatile nature of the digital objects and collections. The responsibility of the National Libraries in the digital era usually takes two dimensions-

❖ Building Digital Collections of Traditional Materials

The National Libraries, policies and practices regarding traditional materials are highly evolved based on centuries of policies and frameworks. The National Library has the mandate and the mission to preserve the intellectual output of the country and legal frameworks have been in place towards the same. As a library of last resort, the National Library also has the responsibility of meeting the information requirements of each one of its citizens. With the emergence of the digital era, most National Libraries have initiated several programs— American Memory Program of the Library of Congress and many other similar efforts by most National Libraries. These endeavours emphasise the commitment of the national libraries to harness the ICTs for facilitating equity of access to their traditional holdings. These digital collections encompass the rare books, newspapers, music, paintings and such other traditional materials.

The following are a selective listing of such endeavours

1. The National Digital Library Program of the Library of Congress and the American Memory Program (<http://memory.loc.gov/>)

The National Digital Library Program (NDLP) of the Library of Congress is a Program to assemble a digital library of reproductions of primary source materials to support the study of the history and culture of the United States. The NDLP began in 1995 after a five-year pilot project, by digitising selected collections of Library of Congress archival materials that chronicle the nation's rich cultural heritage. The Library has created a wide array of digital entities: bitonal document images, greyscale and colour pictorial images, digital video and audio, and searchable texts in order to reproduce collections of books, pamphlets, motion pictures, manuscripts and sound recordings. The project developed a range of descriptive elements: bibliographic records, finding aids, and introductory texts and programs, as well as indexing the full texts for certain types of content to provide access to the reproductions. American Memory is a gateway to the rich primary source materials relating to the history and culture of the United States. The site offers more than 7 million digital items from more than 100 historical collections.

2. The National Library of Canada's Inventory of Canadian Digital Initiatives (<http://www.nlc-bnc.ca/6/46/index-e.html>)

The Canadian Inventory of Digital Initiatives provides links to, and descriptions of digitised Canadian resources created for the Web. These initiatives include digital collections centred around themes and collections, reference sources, and databases. The Inventory provides an overview of each submission that includes its name, participating organisations, content description, subject categories (broad Dewey decimal classes), and contact information. This information supports a useful search mechanism for visitors.

3. The National Library of Australia's Digital Collections (<http://www.nla.gov.au/digicoll/>)

The digital collections of the National Library of Australia include full-text databases, online Australian government publications, archived Websites, and online copies of significant Australian material in traditional formats – photographs, paintings, cartoons, transparencies, negatives, postcards, maps, printed music, manuscripts, books and journals.

4. The National Library of Scotland's Digital Library
(<http://www.nls.uk/digitallibrary/>)

Some of the outstanding resources of the library are digitised for viewing online. They include such collections as maps, early Scottish books, history of Scotland and Scottish books and others. Though a recent endeavour, its collection continues to grow steadily.

5. British Library's Images Online
(<http://ibs001.colo.firstnet.net.uk/britishlibrary/index.jsp>)

This is a site that provides access to thousands of images from the impressive collection of the British Library.

6. The National Library of New Zealand's Digital Collections
(<http://www.natlib.govt.nz/en/digital/index.html>)

The digital collections of the National Library of New Zealand include the newspapers, oral history collections, photos and art works and others.

7. The Royal National Library of Sweden
(<http://www.kb.se/ENG/kbstart.htm>)

The Royal National Library of Sweden has a separate digitised collection of posters, images of manuscripts and others.

A survey of these national initiatives suggests that most National Libraries are focusing on digitising and building digital collections of some of their important collections such as newspapers, paintings and historical materials, especially those relating to their nation's history and culture

❖ Preserving Digital Heritage

The spread of Internet has been not only rapid but also widespread. The digital age has spawned a new excitement in the society that has resulted in most communications and records of information and knowledge going electronic. There is a considerable amount of information available online – this is true of all sectors: government, academia and commercial. Both the Indian and the state governments have policies and agendas that give primacy to online dissemination of information. As a result, most governments' public domain materials are beginning to appear online. In the academia also there is considerable interest in going online. Considerable variety of publications from the academic sector is available online on university servers including official administrative publications such as handbooks and course details and the kind. It may also include materials

such as course materials, lecture notes, etc. In some cases, scholarly publications such as preprints, reprints and the like may also be available online under the Open Access Publishing programs. Companies use the Web to market their products and services, and in addition provide useful product and market information.

The single most critical concern regarding information in the digital domain is its 'unstable and fluid state' of digital materials. While the print media offered the comforts of a fixed medium in its easily recognisable formats such as books, journals and others, the new digital age brings in immense possibilities and anxieties. These new electronic resources share few similarities with the old print medium. These new electronic resources include millions of Web pages, databases; reports produced by individuals, organisations—companies, institutions and government agencies. Such resources are growing not only in number but also in importance. This has challenged the library community to conceptualise, contemplate and commit to managing these online resources. The response to these challenges has been diverse and policies and efforts are under development.

In this paper, we present a scenario of such policies and efforts in collecting, archiving and maintaining online resources

4 Electronic Resources and Archiving Issues

There are a variety of online publications today. They span most traditional genres such as journals, newspapers, and books including the new genre of Web pages. The transient and volatile nature of the digital medium, the rapid uptake of publishing on the internet, the breakdown of traditional publishing controls and conventions, and the sheer volume of information being produced challenge libraries to respond suitably and adequately. Highly significant information published today may well have disappeared tomorrow if action is not taken from the time it is created to build in safeguards to ensure ongoing access.⁽⁹⁾ In this paper we focus only on the archiving of the Web resources.

In view of the above scenario, there is justifiable concern regarding the volatility of the Web resources. The concern stems from the following:

- The global nature of the Web. As the Web is a global phenomenon, and it does not fall neatly into national boundaries.
- Unclear responsibilities for preservation - the diverse nature of the Web means that a variety of different organisation types are interested in its preservation.

- The Web's fast growth rate – there is so much excitement about the Web as a medium resulting in many different kinds of things being published on the Web.
- The 'fluid' characteristic means that it is difficult to keep up-to-date with its content sufficiently for humans to decide what is worth preserving. The life expectancy of these Web resources is very uncertain– estimates put the average life expectancy of a Web page to be between 44 days and two years. Since 1998, OCLC's Web Characterisation Project (10) has tracked trends in growth and content of publicly available Web space. The statistics are quite revealing. IP Address volatility is fairly high with only half (55-56 per cent) the IP addresses being available in the next year; Within two years, a little over a third (35-37 per cent) remain. Four years later only 25 per cent of the sample IP addresses could be located. The instability of the Web resources is reflected in OCLC's annual reviews. While some disappear, others become unavailable due to change in URLs.
- Web technologies are immature and evolving all the time. Increasingly, Web content is delivered from dynamic databases that are extremely difficult to collect and preserve. Some sites use specific software (e.g. browser plug-ins) that may not be widely available or use non-standard features that may not work in all browsers. Other Websites may belong to the part of the Web that is characterised by the term 'deep Web' and will be hard to find using most Web search services and maybe even harder to preserve.
- Legal issues relating to copyright, the lack of legal deposit mechanisms, liability issues related to data protection, content liability and defamation.

However, slowly some kind of institutional arrangements and mechanisms are emerging. In this situation, the national libraries are evolving as main agencies, having initiated some projects to address the challenges of archiving the web. One of the earliest initiatives in this direction was the Internet archive.

5 The Internet Archive

The Internet Archive (<http://www.archive.org/>) is a digital library of Internet sites dating back to October 1996. Free access to the Internet Archive is available using the Internet Archive Wayback Machine. The Internet Archive has international coverage and includes copies of sites of all countries. It is a public non-profit organisation that was founded to build

an 'Internet library,' with the purpose of offering permanent access for researchers, historians, and scholars to historical collections that exist in digital format. Founded in 1996 and located in the Presidio of San Francisco, the Archive has been receiving data donations from Alexa Internet and others. In late 1999, the organisation started to grow to build better-rounded collections. Currently with an archived collection of 100 terabytes and growing at a rate of 12 terabytes a month, the archive contains multiple copies of the entire publicly available Web. The Archive can be browsed with the help of its 'Wayback Machine'. The Internet Archive Wayback Machine is a service that allows people to visit archived versions of stored Websites. Visitors to the Internet Archive Wayback Machine can type in an URL, select a date, and then begin surfing on an archived version of the Web. The Internet Archive is stored on dozens of slightly modified servers running on the FreeBSD operating system. The automated system crawls the Web every few months or so and captures the contents of the site.

6 National Libraries and Archiving of the Web

There are many initiatives undertaken by the National Libraries of some of the countries to provide leadership in the area of archiving the Web resources. Some of the significant National Library initiatives in this direction are outlined here.

6.1 National Library of Australia's PANDORA and PADI Projects

In recognition of its statutory collecting responsibilities, and recognising online publications as an intrinsic part of the national documentary heritage, the National Library of Australia, together with a number of partners, is building the National Collection of Australian Online Publications. The purpose of the National Collection is to ensure that Australians of the future will be able to access today's significant Australian online information resources. The National Library of Australia commenced selecting and archiving significant Australian Web publications in 1996. This program that began as PANDORA (Preserving and Accessing Networked DOcumentary Resources) (<http://pandora.nla.gov.au/>) is now a routine activity for the NLA-having moved from a 'proof of concept' to a national collection building operation. For a number of years now the work has been a mainstream, operational activity and it is referred to as the National Collection of Australian Online Publications, although the name, PANDORA Archive, is still used interchangeably for it.

The National Collection of Australian Online Publications is a highly selective one containing to date only 2000 Websites. Nevertheless, it already constitutes a strongly representative sample of Australian Web publishing

by academic, government and commercial publishers, and community organisations. A number of the Websites captured in the archive, including the official Website for the Sydney Olympic Games, have already disappeared from the live Internet. Moreover, about one-third of the sites have been captured on multiple occasions, allowing the gathering of successive issues of serials, and enabling the collection of a sequence of snapshots, which demonstrate how some sites have changed over time. The Collection now comprises 10,600,000 files using 320 gigabytes of storage; and is growing at about 500 new titles and about 400 re-gathers each year.

The National Library of Australia's efforts in this direction have been exemplary. The main focus has been on – developing selection guidelines; developing a Digital Archiving System, with its latest version being implemented in June 2001; evolving metadata standards; development of the national naming schema of persistent identifiers called the Australian Digital Resource Identifier (ADRI); and a preservation policy and set of strategies.

PADI (Preserving Access to Digital Information) (<http://www.nla.gov.au/padi>)

The National Library of Australia's Preserving Access to Digital Information (PADI) initiative aims to provide mechanisms that will help to ensure that information in digital form is managed with appropriate consideration for preservation and future access. PADI is managed by the NLA with support from CLRI (Council on Library and Information Resources) DPC (Digital Preservation Coalition) and ERPANET.

Its objectives are:

1. to facilitate the development of strategies and guidelines for the preservation of access to digital information;
2. to develop and maintain a Website for information and promotion purposes;
3. to actively identify and promote relevant activities; and
4. to provide a forum for cross-sectoral cooperation on activities promoting the preservation of access to digital information.

The PADI Website is a subject gateway to digital preservation resources. It has an associated discussion list [padiforum-l](#) for the exchange of news and ideas about digital preservation issues.

The National Library of Australia has also prepared for UNESCO the

Guidelines for the preservation of Digital Heritage forming part of UNESCO's campaign to improve access to digital heritage for all the world's peoples. The Guidelines have been prepared to offer realistic and useful guidance for those responsible for preserving digital heritage, including those having only very limited resources. The UNESCO Charter on the Preservation of the Digital Heritage (Document 32 C/28) presents a compelling case for digital preservation. The Guidelines are intended as a companion sourcebook to the Draft Charter. A clear link exists between the two documents, the Draft Charter presenting those advocacy and public policy issues that are outside the scope of technical and practical guidelines (<http://portal.unesco.org/ci/ev.php>)

6.2 The Royal National Library of Sweden's Kulturarw3 Heritage Project (<http://www.kb.se/kw3/>).

The National Library of Sweden began the Kulturarw 3 in the year 1996 with the goal of collecting, preserving, and providing access to Swedish electronic documents. The scope of this project is all publicly available Web resources limited to Swedish Web space. All Internet resources with the domain name of Sweden .se and also other domain names such as .com, .org, .nu included if the servers reside in Sweden. In other words, the approach is a comprehensive one unlike the Australian PANDORA approach, which is selective. Thus the strategy is to cover everything that has a server address ending on .se, 2) generic top-level domains (com, org and net) registered with a Swedish address or telephone number, 3) Swedish domains under .nu (Niue, nu means now in Swedish). There is no selection on document type, i.e. all picture, sound and other file types are collected. As on the spring of 2000, the collection comprised about 65 million items. About half of them are text documents, mostly html and plain text. Through this project KB is also laying the foundations of a collection of Swedish electronic publishing for our time and for coming generations. The archive contained in 2000, 3 4 terabyte of data in 130 million files gathered in eight distinctive snapshots. Only in the seventh run performed in Spring 2000 more than 1,2 terabyte were collected from 96.600 sites.

The collection strategy is to take snapshots a couple of times a year. The collecting robot starts with an empty collection and harvests every page once and then stops. In this way a complete copy of the Swedish Web is stored each time. To be a real "snapshot" the collection time should be as short as possible. In practice it takes a couple of months. The limiting factor is the big Websites, which takes a long time to harvest completely. Since the start of the project till 2000, seven downloads of the Swedish Web has

been done, the first in summer of 1997, the most recent one during the spring of 2000. In the latest complete download, spring 1999, 15 million files were collected corresponding to about 7.5 million pages. The data amounts to about 300 Gbyte/sweep. More than 100 different MIME-types have been found. However, the four most common, text/html, text/plain, image/jpeg and image/gif, comprises about 97 per cent of all documents.

6.3 Project EVA at the University of Helsinki Library (<http://www.lib.helsinki.fi/eva/english.html>)

EVA based at the Helsinki University Library—the National Library of Finland is a joint project of libraries, publishers and expert organisations. The central aim of the project is to create methods and tools to collect, register and archive electronic publications distributed on the Internet and to investigate conditions for long-term preservation of them in libraries.

7 Developing a Web Archiving Policy and Plan of Action for India

With the growing popularity and importance of the Web as a communication medium, it is important to recognise that an increasingly significant amount of information from the governments, academia and other institutions and the commercial establishments is being published only in the Web. Such informational materials form an important part of our national documentary heritage and a national policy and an action plan is to be in place. This is very critical, given the ‘impermanence’ of the Websites and fluidity of the content. The issues that need to be considered for developing such a policy and action plan document are outlined here.

7.1 Defining Online Publications

It is difficult to answer the question what constitutes an online publication? However we need to define the scope of the online publication. Hence it is important to come up with a working definition of online publications. For example, the PANDORA defines an online publication as ‘A publication is information, regardless of its format or method of delivery, that is made available to the general public, or to an identified public, either free of charge or for a fee. In theory this includes everything publicly available via the Internet. In practice the National Library of Australia will selectively collect only certain types of nationally significant Australian online publications without print equivalents, including both those that are free of charge and those for which there is a fee for accesses. The definition should also clearly state the inclusion and exclusion principles.

Another issue is defining what is Indian content? Generally, this includes material about India, by Indians and of interest to India. In the

case of online publications, an additional factor to contend with is the location of the server. Both the Swedish and the Australian programs are not restrictive in this respect and include national content irrespective of the physical location of the server.

7.2 Selection Guidelines

The selection policy basically includes what to cover but in a way is tied to how to do as well. It is important to consider the differing approaches adopted by some of the ongoing projects and study the implications. There are basically two approaches –the comprehensive approach adopted by the Kulturarw3 - The Swedish Archive and the selective collection development policy of the NLA. Each model has its own merits and demerits. The comprehensive approach entails huge resources and hence investments in technical infrastructure, the selective one demands investments in human resources and an effective management policy.

The selection guidelines need to clearly define the following-

- Types of publication: What categories of publication are to be included? Journals, conference proceedings, annual reports, discussion lists, chats, blogs and others. Political, cultural and education sites and publications.
- Types of organisations: Publications by governments, higher educational institutions and others
- Formats of publications: With differing file formats available on the Internet, file format is an important decision to be made as part of the selection policy
- Prioritising: One other important issue, given the limitations on the resources. A sound selection policy will also have to clearly outline the priority criteria

7.3 Collection Strategies and Models

The technical mechanism and system for capturing the Web content, is another critical issue. The automatic crawlers, robots and such mechanisms are generally employed for this purpose. The second factor is the frequency of crawling or 'snap shots'. This is an important consideration as some of the Websites may not exist long enough to be captured if the snapshots are very infrequent. A couple of times a year may be too infrequent for certain kinds of publications. Increasing the frequency may depend on the type of publications, infrastructure development and other issues. It may also be necessary to have the search robot check how frequently the content changes and then evolve a capturing frequency for differing publications.

7.4 The Digital Archive System

The storage, archiving and other issues are of great concern, given the goal of preservation. Sound technology and management policies are to be evolved. The Archive system has to manage the gathering mechanism and schedule, metadata both technical and administrative about the gathered materials, quality checking and problem fixing process, access control and public display issues, management reports generation and others. The software and its management is a principal consideration.

7.5 Collaborating, Liaising and Partnering

The success of these endeavours depends on the synergy that is brought in by the participation of all stakeholders. Therefore it is important to identify the formal partners –other agencies such as national archives particularly for different media such as films and broadcasting and others. One other critical issue for the success of such a venture is liaising with the publishers, authors and others who own the rights. Establishing linkages and leveraging on the same would strengthen and augment the initiative. Identifying and networking with technology partners is another consideration. This may entail sensitisation and awareness programs. These days of digital era, the rights issue is a very sensitive one and is to be handled adequately. Establishing mutual trust and understanding may be the key.

7.6 Developing Mechanisms and Systems for Persistent Identifications

Given the goal–long–term preservation and access, the issue of persistent citation and identification becomes central to the Archive System. If the online publications in the Archive are to be preserved for posterity, cited in other publications a uniform system of identification that is not dependent on domain name or other volatile factors is to be in place. The DOI and other international systems are to be adopted and the National Library of India has to position itself as a national agency for this task. The Australian example of developing a national naming schema and a persistent identification system that is in line with the international efforts and systems is worth considering. This is to be integrated with the software for digital archive.

7.7 Legal Deposit Mechanism

The use of legal framework and extending the provisions of the legal deposit laws is being explored as one of the viable means of collection development policies. This approach is also supported by the International Conference Bibliographic Services held in Copenhagen in November 1998 which reaffirmed the value of legal deposit and recommended that states

should as a matter of urgency examine existing deposit legislation and consider its provisions in relation to present and future requirement and if necessary the existing legislation be revised.

It might be a very viable and effective way to have legal deposit provisions for online publications; there are other issues to contend with such as defining an online publication, infrastructure and other implications, implementation mechanisms and others. However it is a route worth considering.

8 Conclusion

The centenary year is an opportune time for the The National Library of India to position itself and assert its role in documenting the digital heritage of India and develop a policy document and an action plan for building the digital collection, through an appropriate technical and organisation mechanism. Given the transient nature and growing importance of the Web, tomorrow may be too late. Leveraging on the technology and experience of other nations and evolving the best practices are the most suited strategies for our country.

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Marketing the National Library of India

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1 Introduction

The paper presents random thoughts on the need for client-centric marketing approach for the National Library of India based on the prevalent practices in other National Libraries of the world and the author's organisational experience in marketing library services. It highlights the need for developing a vision document for the National Library of India and argues for autonomous status and functional freedom for the National Library.

2 Is it Really Necessary to Market the National Library?

This question haunted the staff and the union of the National Central Library of Rome when the library started its new marketing department in 1997.¹ People in the library perceived that the policies of the private and commercial world were erupting and breaking into the public and institutional world of the library. To the pleasant surprise of all, the adoption of marketing concepts did lead to conceptualisation and successful completion of two projects that changed the phase of this National Library of Italy. One was "Library Quality Project" that improved the library's performance significantly through the ISO 9000 drill. The other was "Qualifying Spaces and Services Project" leading to a completely new look and ambience of the library, both functionally and aesthetically. The success of these two projects further led to doubling the library's budget by the Government of Italy.

British Library, whose annual spending during 2002-2003 was £110 million pounds (Rs.900 crore), earned £34 million (Rs.278 crore) through sales of its services. It received £85 million (Rs.697 crore) from the Government and ended the year with £10 million in surplus (Rs.82 crore).² Surely, the library could not have generated 30 per cent of its budget on its own through its services without "marketing" as its core functional value.

In 1998, the National Library of the Netherlands developed a four-year marketing plan and put through its implementation. The marketing

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strategies it adopted paid rich dividends. In the words of Dr. Perry Moree, the Chief Financial Officer of the Library, "Our marketing plan has helped us to attract more people to our building and more visitors to our Website. Also, more and more people in the Netherlands and outside our country are getting to know the KB (National Library)."³

The library 2000, a 10-year Master Plan by the National Library Board of Singapore for Singapore National Library has identified "Marketing Orientation" as one of the six key strategies.⁵

3 Marketing is Fundamental to Progress

Progress in a democracy – social, political, educational, scientific, and cultural or any kind – is an infectious movement. It is catalysed by the collective will, hype and participation of citizens. The national or organisational leadership that has a vision and plan for progress cannot achieve progress unless it is able to communicate effectively and make its plan acceptable to its beneficiaries for effective implementation. This effective communication for acceptance and participation by a targeted audience can be called marketing effect.

Marketing is the art of communication – to draw attention, to create positive impressions, to influence decisions, to get acceptance and participation. Marketing can create a positive spiral effect for growth. Hence, everything in the world that needs progress needs marketing. Contrary to common myth, non-commercial organisations and products need greater skills and degrees of marketing than their commercial cousins. OCLC is a classic example of its pre-eminent positioning in the academic world of librarianship with a successful global presence. Everyone knows OCLC in India but hardly anyone uses its products. Reason – librarians know OCLC in India but its products are not marketed in India. Even non-competitive products require greater marketing efforts than competitive products.

The purpose of marketing is to reach out. Ideas, concepts and products need to be reached out to their potential beneficiaries. Reaching out is a process of discovery – finding the targets, understanding their needs and mindsets, and making them accept what we have to communicate or offer. It involves market surveys and research, devising promotion strategies, using effective channels like advertisements and exhibits, pricing, distribution, pre - and post-delivery supports, and continuous feedback for improvement. Marketing is the means to let people know the existence and values of what they need to know and use. The more they hear and see about the product and its value benefits to them, the greater are the chances of acceptance and usage.

4 Marketing is Not Selling

Marketing is often undermined by the libraries who traditionally subscribe to the ideologies of the non-commercial world, perceiving it to be an act of selling. Selling is a key component of marketing. But it is only one of the end products of marketing. Marketing function begins even before the product (or a service) is born, whereas selling follows as a process to conclude the exchange of the product between the provider and recipient. Marketing will get the patrons to get into the library. Selling helps them in using the library. In this sense, the library catalogue or the ambience of the library are the sales tools, and the library staff is the sales personnel.

5 Customer is Central to Marketing

The beneficiary of the services, whom we call customer or user, is central to the marketing concept and not the service provider (the library). This aspect characterises the fundamental difference between an organisation that adopts marketing approach and those who do not. Who is the client of the National Library today? Who are the potential clients of tomorrow? These two questions should decide the entire planning process of the National Library. Libraries, like other public institutions have a peculiar perceptual problem in adopting a totally client-centric model. The users of the library do not pay for the services directly but they pay indirectly as taxpayers. Neither is the user of the library not demanding his service needs from the library, nor is the library psychologically aligned to take the user seriously as someone whose satisfaction decides the survival of the library. The taxpayer is a faceless citizen and rarely comes out in the open to demand the best National Library service for the country. Because the library's survival and growth is not directly dependent on the client's needs and satisfaction, client-centric model is not a natural choice in the library's marketing plans. Hence, the genuine adoption of the client-centric model will have to be driven by the library's leadership by its faith in the marketing approach and a passion for customer satisfaction.

6 Changing Role of National Libraries

Driven by a historic vision and perspective of archival role to preserve the intellectual heritage of the nations and civilisation, the National Libraries "inevitably" followed a model of controlled and restricted access to those pursuing higher education, research and scholarship.⁴ The inevitable that created this barrier was print. The emergence of digital libraries in the post-Internet era is changing the role of National Libraries too. The libraries can successfully achieve the goal of both long-term preservation and access

without one conflicting with the other. As Natalia Santucci, the Head of Marketing and Management Department at the National Library of Italy in Rome points out – “Democracy and mass education together with the availability of information technology has deeply changed the role and mission of National Libraries.”¹

The National Library is no longer a heritage building housing dark preservation rooms with access limited to once-in-a-life-time visiting scholars. While the preservation role should continue as its core national responsibility, the focus should expand to access. The concept of digital library when suitably adapted to the National Library can bring the National Library to the mainstream of mass public service. The National Library can harness a new opportunity of playing the role of a national public library. Responding to the changing times and needs of the knowledge society, many National Libraries are found to be evolving a new vision and redefining their mission and goals.

7 The Clients of National Library

With its changing role, the National Library's client base will also change. Going by its essential and historic role keeping the intellectual heritage of the nation alive for use generations-after-generations, the primary client of a National Library is and will continue to be the government of the country. Through its process of creating permanent archives, the National Library also provides a valuable service to the authors and the publishers whose works are preserved. By making those works widely accessible, the National Library can expand its role. In this process, the National Library will be earning a new set of clients, the general public or the society at large. In its expanded role, the National Library has three sets of clients.

1. The government
2. Authors and publishers
3. The society at large

8 Marketing the National Library of India

The marketing questions to our National Library begins with –

- The need for self-critical assessment of the performance effectiveness of its role over the last 100 years against its national mandate and mission;
- The need for redefining its roles and services to perform better and progress in its mission and goals, in the context of new paradigms of E-media for preservation and management of knowledge assets; and

- Even redefining its mission if that is what its clients and the changing times need.

The answers will have to be found through –

- An in-depth review of the records of National Library's past performance, and
- A thorough and detailed market research initiative, preferably conducted by an independent, non-government, third-party consulting organisation.

9 Marketing the National Library to the Government of India

The Government of India being its primary client, the success of the National Library lies in its ability to market its vision and plans to the government first. Books, the embodiment of knowledge are respected as the divine power (the Goddess Saraswati), but the National Library of India, the highest temple of learning in the country, has remained yet another temple among the thousands in the country known for its millions of gods. The divine respect of the people and the government will have to be seen in its rich offerings in the form of "visibly high priority" and "big budget" to make the National Library a heritage monument of daily usage by all knowledge-seeking citizens of India. India is the largest shining democracy in the world. A comparative look at the budgets of India's National Library is revealing enough about the marketing challenge our National Library has in getting its right share of the government's budget

Country	Year	Millions	Rs. (Crore)
National Library of Australia	2000	A\$ 215	742
National Library of Medicine, USA	1999	US\$ 171	770
National Library of Canada	2001	C\$ 48	166
Library of Congress	2001	US\$ 547	2,462
British Library *	2002-03	P. 110	902
Singapore National Library	2002-03	S \$ 43	116
India **	2003-04	Rs. 150	15
* This includes British Library's sales earnings of £ 34m (Rs.279 crore)			
** The figure includes both plan and non-plan budget allocations.			

The leadership at the National Library of India has a formidable marketing challenge to make the government and the parliament realise and accept the need to make a dramatic increase in its annual and the plan budget by several times (at least by 10 times the current figure).

10 Authors and Publishers as Collaborating Partners

The community of authors and publishers are both clients and partners of the National Library. They have a stake in the health and wealth of the National Library. The National Library should accept the challenge of marketing its partnership benefits to this community and make them contribute a share equal to what the government grants each year. The Publishers' Association and various professional forums that represent authors in different states are potential target clients for the National Library. The two largest journal publishers of the world – Kluwer Academic Publications and Reed-Elsevier recently announced that the Netherlands National Library will be the permanent digital archive for all their journals including all available backfiles. This signifies the extent of partnership opportunities.

11 Seeking Social Support

The society at large, and in particular the future generation is the long-term beneficiary of the National Library. The National Library has to market the vision like “the benefits of past knowledge to future citizens,” etc., through innovative programmes and powerful messages to all sectors of the knowledge society. It should evolve a vision and powerful enough messages to Corporate Houses and philanthropists to seek their support in preserving and providing today's knowledge to promote the future interest of these stakeholders.

12 Vision and Mission for New Directions and Services

It is not the purpose of this paper to list what new services the National Library of India should provide in the coming years. These have to be evolved over time based on the vision and the mission of the National Library. Is there a vision document for the National Library of India to shape its future in this millennium? An independent Website has been launched for the National Library which is a good beginning. (<http://www.nlindia.org/index2.html>). I was not able to figure out any such document. Nor, could I find a mission statement for our National Library to direct its plans. On the occasion of its centenary celebration, the National Library should come out with its “Vision Document” for this millennium, and publicise it vibrantly in different versions and through various media

to reach out to every one of its clients. Such a document can set the momentum for the library's resource mobilisation and development plans.

13 A Serious Suggestion

In the liberalised India of global ambitions the National Library needs a new vision and a facelift. Barring the intellectual community representing the elite authors and big publishers, neither the Government of India nor the public of India appear to be concerned as much about both the heritage and usage values of our National Library as they should be. It is a unique heritage monument which is both visited and used. It is visited as a monument and used as the knowledge repository of the nation. The National Library of India always belongs to the citizens of tomorrow's India first and today's India next. The government is its primary client, controller and the benefactor. Its controller's role is an unenviable one as the National Library is likely to be run as the property of the Ministry that runs this library. The benefactor is not able to contribute enough funds to carve a new vision.

This pride-of-nation monument needs an autonomous status to perform its role justifiably. The National Library of the Netherlands secured its autonomous status in 1993. There are a few other examples too. There was press news about the government's intention to grant autonomous status which was echoed in the parliament during a parliamentary debate on July 30, 2002. The leadership of the National Library of India will have to market itself to earn this status for the library first. The Library Associations of the country and all stakeholders like publishers and authors will have to take this as a cause. This can be a beginning battle for our National Library to rediscover its role for its second century of progress.

14 Conclusion

An event celebrated by the British Library in collaboration with the London Business Innovation Centre to name the Inventor of the Year finds a prominent position in the 13th annual report of the British Library (2002-2003) as a case-study. Mark Sheahan, Managing Director of CompGen Limited, was named Innovator of the Year 2003 in a ceremony held at the British Library in November 2002 by the London Business Innovation Centre. His simply-squeeze-to-open containers are a real breakthrough in packaging design, cheaper and quicker to produce than standard closing systems. His invention has already been taken up by major packaging producers in the US and the UK. At the function held in the library to

felicitate this inventor, Mark Sheahan profusely acknowledged the service of the library in these glorifying words – "... You inspire confidence.... The Library's expert staff are a great help for the new inventor. They run patent clinics to help people get started. Inventors are vulnerable and can be taken advantage of. The Library's E-sources empower the lone inventor." Can there be a better way of marketing the National Library as a leader in the knowledge society?

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Royal Legacy: Collections of the National Library of Thailand

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The National Library of Thailand was established by King Chulalongkorn in 1905 to mark the hundredth birth anniversary of his scholar father King Mongkut (King Rama IV). Collections of the National Library originated from royal collections. National collections have been increasing every year along with library building development both in Bangkok and the provinces. However, collections are still based on the royal legacy of kings.

1 Introduction

The National Library of Thailand was established by King Chulalongkorn of Siam or King Rama V in 1905 about 23 years after his visit to India by the amalgamation of three large royal libraries into the Vajiranana National Library to mark the hundredth birth anniversary of his father King Mongkut of Siam (King Rama IV). At first the Library was situated in the Grand Palace. Eleven years later, King Vajiravudh of Siam (King Rama VI), son of King Chulalongkorn transferred the Library to Thavornvattu building outside the palace wall to serve the public at large. Ten years later, King Prajadhipok (King Rama VII) donated the entire valuable legacy of his elder brother to the Library and changed its title to Vajiravudh Library. Then in 1932 the title had changed to National Library of Thailand. Over the years there had been the ever increasing appreciation on the role of the National Library in education, culture and national development. The main new modern building was built in 1962 and it was open to the public in 1966.

2 Development of Buildings

The main building which was opened in 1966 housed the heritage graciously given by King Chulalongkorn (Rama V) and his heirs which was previously housed in the Thavornvattu building. Collections later on increased around royal collections of King Rama V, King Rama VI as well

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as King Rama VII. In 1947 a building was constructed near Thavornvattu building to house another large collection that once belonged to H. R. H. Prince Damrong Rajanubhab, who was the brother of King Rama V, the King's eminent Minister of Interior and the father of Thai history and archaeology. The new building for the same library was constructed inside Wang Voradis Palace by his heir to replace the old one. Then it was given to the National Library of Thailand. At present it houses the invaluable collection of Prince Damrong Rajanubhab as core materials on Thai history, archaeology and culture.

In 1979 the Naradhip Centre for Research in Social Sciences was set up in the old building of Vajiravudh Library (Thavornvattu building). Although it was moved to the smaller building in the same area, its collection still forms an important part of national collections.

In 1990 a new building was built to house evidence of public opinion when the Thai people signed their names to agree that King Bhumibol Adulyadej be "King Bhumibol Adulyadej the Great" on the occasion when the King reached his 60th birth anniversary.

In 1988 Princess Sirindhorn Music Library was built. Its music collection was organised and opened to the public in 1994.

In 1997 King Rama IX Music Library was opened to the public. Its collection includes books on music, music and songs composed by His Majesty King Bhumibol Adulyadej.

3 National Library Branches

Although there were branches of the National Library before H. E. General Prem Tinsulanonda became Thai Prime Minister, but when he was in office (1980-1988) he had planned and supported the National Library Branches in the provinces of the North, Northeast, the East, the West and the South of Thailand to celebrate important events related to His Majesty King Bhumibol Adulyadej. At the time of writing (March 2004) the National Library has 17 branches. Some good examples on setting up the National Library Branches can be cited below.

3.1 Ratchamangkhaphisek National Library Branch

From 1988 on the auspicious occasion when the reigning period of His Majesty King Bhumibol Adulyadej reached the same age of his august grandfather King Chulalongkorn or King Rama V, the Thai Government and Thai people cooperated in the construction and establishment of

Ratchamangkhalapisek National Library Branch in Chiangmai in the North, in Chanthaburi in the East and Kanchanaburi in the West of Thailand.

3.2 Kanchanapisek National Library Branch

To join the collective celebration of the 50th year of His Majesty King Bhumibol Adulyadej ascending the throne on June 9, 1996, the Statesman General Prem Tinsulanonda Foundation had given the land area near the Saththa House in Songkhla Province Southern Thailand and the fund to the Fine Arts Department to build the National Library Branch. The building was completed in June 1996.

H. M. King Bhumibol Adulyadej had graciously given the title of this National Library Branch as “Kanchanaphisek National Library Branch, Songkhla” and it was officially opened on March 19, 1997.

3.3 Queen Sirikit National Library Branches

On the occasion of the 5th Cycle of Her Majesty Queen Sirikit Birthday anniversary celebration, the National Library of Thailand, the Fine Arts Department had proposed to set up branches libraries in Songkhla and Trang Provinces to celebrate this special occasion, namely:

Queen Sirikit National Library Branch, Songkhla

On September 18, 1995 Her Royal Highness Princess Mahachakri Sirindhorn had graciously laid the foundation stone of this library which is situated in the Public Park of Hadyai municipality, about 30 kilometres from Songkhla. The construction of the National Library building including National Archives building had already been completed. It is now officially open to the public.

Queen Sirikit National Library Branch, Trang

At H. E. Chuan Leekphai's hometown, Trang Province, the Fine Arts Department had built the branch library just in the same place as the National Archives, that is at Wat Matshimaphum, Muang District, Trang Province. It is already open to the public.

3.4 National Library Branches at Four Corners of Bangkok

Bangkok is a very large sprawling metropolis with a population of more than 8 millions. The main National Library of Thailand at Samsen Road with limited seats of 1700 and limited working space could not accommodate all library users. The number of library readers is increasing.

While readers face commuting problems, they have to consult the information resources of the main National Library collections. It is, therefore, very difficult for them to reach the library.

Owing to these reasons, the National Library therefore, proposed to the government to set up National Library Branches at four corners of outer Bangkok. This project had been approved by the Cabinet since June 3, 1993.

The first National Library Branch at 4 cardinal points of Bangkok is a part of collective celebration on the occasion of the 50th Anniversary of His Majesty King Bhumibol Adulyadej ascending the throne. His Majesty called this library the "Chaloem Prakiat National Library Branch, Lat Krabang".

This National Library Branch in honour of His Majesty the King is situated in the area near the Phrotphitthayaphayat School, Soi Luang Phrot, Khet Lat Krabang, Eastern Bangkok. It was built with the financial support of a government budget in February 1996.

The building is in applied Thai Style, three floors, 3,455 square metres. The library was opened in June 1999.

4 Collections

The National Library of Thailand is the only one deposit library in the country. Collections consist of manuscripts, rare books, printed materials both journal, newspaper and monograph, audio-visual materials as well as modern information materials, for example, CD-ROM and databases. Though the collections amount to about 2.6 millions, at present there is no legal deposit law in Thailand. The National Library acquires publications by the provision of the Press Act 1941 by government resolution to enforce ministries and state enterprises to send their publications to the National Library, by purchase, exchange and gifts.

4.1 Manuscript Collection

Manuscript collection of the National Library is unique and is composed of

- a. **Inscriptions:** There are about 53 stone inscriptions dating back as early as 6th century A.D. Inscriptions in general were inscribed in stone, wood, etc. in various oriental languages, for example Pallava scripts in Sanskrit, Mon and Khmer scripts in Sanskrit, Thai and Pali languages, Thai scripts, etc.

The collection also has rubbings of many stone inscriptions. Original stones are sometimes still in situ but some of them have been exhibited in the National Museums and other cultural institutions.

- b. Traditional Thai Books.** This collection is formed by more than 90,000 Thai traditional books of white paper or black paper in the form of accordion pleat. Letters are mostly in black and yellow colours with some exceptions. Subjects of these manuscripts vary: history, archives, law, administration, astronomy, and astrology, literature, custom and traditions, medicine and pharmacy, religion and philosophy, especially literature.
- c. Palm-leaves.** More than 225, 733 items of palm-leave manuscripts are preserved in the National Library of Thailand. Subjects of these manuscripts are usually about Buddhism. Some of them are more than 400 years old. Three quarters of them have been catalogued.
- d. Traditional Book Cabinets.** Apart from the manuscripts mentioned the National Library also inherited 376 pieces of valuable lacquered and gifted book cabinets dating from Ayutthaya, Thonburi and Bangkok periods. Many of these have very beautiful designs on Buddha's life, Buddha's law, Buddhist and Hindu mythology.

4.2 Rare Books Collection

This heritage book collection contains rare editions of about 61,396 volumes of books published in Thailand and in foreign countries. These books go back as far as the reign of King Rama III of the Chakri dynasty in 1836 for Thai publications and in 1691 for English publications. This collection is the most comprehensive collection on Thai history, culture, archaeology, politics and the early development of book publishing in Thailand. Some materials are inherited from the Kings of the Royal Chakri dynasty including King Pinklao of the Palace to the Front. Apart from Royal collections there are other collections, namely:

- 1. Collection of Krommaphra Chanthaburi Narunat which contains books in Sanskrit, Pali, Mon, Burmese and English languages.
- 2. Collection of Phra Patiwet Wisit which comprises old books in English and Thai languages.
- 3. Collection of Rear Admiral Chan Patchusanon consists of books in Thai and foreign languages including old newspapers.

4. Collection of Chalermsongkroet consists of old books in English, Thai and Chinese languages.
5. The collection on Thailand comprises papers on the missions to Thailand of foreigners, books on treaties, history, etc. All of them are in foreign languages, such as English, French, etc.
6. The Royal Gazette collection consists of the Royal Gazettes from the first volume published in B. E. 2417 (1874 A.D.) in the reign of King Rama V up to the present volume.
7. The general collection of all subject fields in Thai and foreign languages.

4.3 Subject Collection

Books received in the later period which are not considered as rare books, are classified according to Dewey Decimal Classification System and kept on open shelves in six service parts in the main building. The first part is the collection of books on generalities, philosophy and religions (room 213). The second part is the collection of books on science, technology and environment (room 205). The fourth part is the collection of books on arts, literature, history, geography and travels (rooms 302 and 304). The fifth part is the Thailandia room (room 303) which is the collection of books about Thailand in Thai and English languages. The sixth part is the collection of research papers, theses, United Nations, UNESCO and PGI publications. (annex to the main building).

Books and periodicals available at the National Library Branches in Bangkok and Provinces are usually organised along the same lines as the organisation in the main National Library in Bangkok.

4.4 Serial Collections:

The oldest serials published during 1844 to 1868 in the reign of King Rama III and IV, are Chot Mai Het (*The Bangkok Recorder*), *Bangkok Calendar* and *Siam Daily Advertiser*.

Besides these periodicals, the National Library of Thailand also contains the following:

Six titles of newspapers published in the reign of King Rama V, 1868-1910.

Thirty- three titles of periodicals published in the reign of King Rama V, 1868-1910.

Nine titles of newspapers published in the reign of King Rama VI, 1910-1925.

One hundred titles of periodicals published in the reign of King Rama VI, 1910-1925.

Fifty-five titles of newspapers published in the reign of King Rama VII, 1925-1934.

One hundred and nineteen titles of periodicals published in the reign of King Rama VII, 1925-1934.

At present the National Library of Thailand has the collection of 2,567 titles of periodicals and 995 titles of newspapers.

4.5 Special Collections

There are many special collections. Only the prominent ones and those related to the King and members of the Royal Family are mentioned here.

a. King Vajiravudh Memorial Hall

King Vajiravudh Memorial Hall was constructed to celebrate the 100th Royal Birth Anniversary of His Majesty King Vajiravudh (King Rama VI) on January 1, 1981, in the precincts of the National Library of Thailand, Samsen Road, Bangkok 10300, just near the Tha Wasukri Royal Landing. The King often resided in this area. Beyond the Royal Exhibition and other facilities there are the Royal King Vajiravudh Collection in the building too.

b. The Princess Sirindhorn Music Library

The Princess Sirindhorn Music Library was established to commemorate the 36th birth anniversary of Her Royal Highness Princess Maha Chakri Sirindhorn on April 2, 1991, with the aim of the depository to preserve Thai and Western music national cultural heritage centre and musical information centre for public consultation.

c. King Rama IX Music Library

On the occasion of His Majesty's Golden Jubilee Celebrations 1996, The Orchestra Aw.Sow. Friday Bands under His Majesty was allowed to construct the building of King Rama IX Music Library sponsored by Chareon and Kunying Vanna Sirivadhanabhugdee. The building structure is joined to the Princess Sirindhorn Music Library Building and it is situated in the National Library compound. The main objectives of this special library are

- To study and research the songs composed by His Majesty and his musical activities.
- To collect and service records, tape cassettes, CDs, videos, visual media, completed music scores.
- To perform His Majesty's music and other music programmes for the public.

5 Preservation and Conservation

Library materials of the National Library of Thailand as mentioned earlier are very rich, both type and content of materials. Since some of them are very old plus facing the problem of the hot and humid climate of tropical Thailand, biodeterioration is one of the very serious problems. To prolong the life of materials the National Library is therefore paying great attention to preventive and curative preservation as well as conservation by the provision of better environment conditions, physical treatment, repairing, photocopy, microfilming and digitisation. To make the Thai people appreciate these valuable materials is one important way to preserve the national heritage. To create public awareness, the National Library has to cooperate with many government offices, private agencies, cultural institutions, monasteries, religious and administrative offices, schools and universities. The National Library usually sends expert teams to schools, universities, monasteries in Bangkok and provinces to promote learning, studying of very old and valuable materials. For example, at present, the Fine Arts Department, parent body of the National Library, every two months organises activities on **Fine Arts Department Touring to Educational Institutions** to introduce all branches of art and culture to students. Part of the programme is to make students appreciate the royal legacy kept in the National Library.

Another notable project is the **Ancient Manuscript Training Project for Persons Concerned in Four Regions of Thailand in 2004** where the first training in the Northeast and the second in the South had already taken place, during December 2003 and February 2001 respectively. The third and the fourth training will take place in the North and in the Central region during April and June 2004 respectively.

6 Publications

The best way to promote collections is to publish books related to those rare manuscripts. An example of this is that after studying, copying, deciphering, reading, translating, analysing and interpreting a single of those manuscripts, the result has to be published. Although in the past many

titles were published, but there are still a large number of titles left to be published.

Anyhow since those important materials are the legacy of former Thai Kings when the government celebrates or commemorates important events, for example royal birthday anniversary, royal cremation, etc. The National Library will take part with the production of publication of titles. One noteworthy example was the National Celebration in Commemoration of the 150th Birth Anniversary of King Chulalongkorn (King Rama V) in 2003 beyond the Government's National Celebration Programme to renovate the Thavornvattu Building, then establish King Chulalongkorn Memorial Hall and other sub-programmes. The National Library has been publishing three titles related to the King. Another example is in 2005, next year, the Thai government will also organise the National Celebration in Commemoration of the 200th Birth Anniversary of King Mongkut or King Rama IV. The National Library will also publish at least three titles to express its gratitude to King Mongkut.

7 Collection's Reference and Research Services

The National Library is open seven days a week, except national holidays, from 9 am. to 7.30 pm. People at all levels and all religions can use the library services. Books, periodicals, newspapers and other tools can be used within the library. The service points are at the main library and its special collections in Bangkok and 17 branches in 15 provinces throughout the country.

Users can have access to royal legacy publications and information provided by using them directly at the main library collections or special collections. Users outside Bangkok can use inter-library loan. Searching for materials wanted, they can consult OPAC (Online Public Access Catalogue) at the main library in Bangkok or through the branch library network. The network of the main library and the branch libraries will give rapid access to users in upcountry areas. Documents needed will be supplied to them by various methods, such as. facsimile service, postal service and E-mail service. The National Library is now linking its database into the Internet system so users who reside anywhere in the country or in the world can have access to the NLT database.

8 Conclusion

As mentioned earlier, the National Library of Thailand originated in the Grand Palace through the farsightedness of King Chulalongkorn (King Rama V) under the name Vajiranana Library in 1905 in gratitude to his

august scholar father King Mongkut or King Rama IV or Prince Vajiranana while he was a monk for 27 years. The latter had a profound knowledge of Latin, English, Pali, paleography, astronomy and other subjects. When his son established the National Library all manuscripts and printed materials had been transferred to the library. Although the library had developed every year with many buildings and branches had been built, the collections increased on the basis of the original royal collection. Thai people far and near are able to consult the legacy collection of Kings as King Chulalongkorn desired about a century ago.

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Information Services in the National Library of Russia

Olga Khulish*

1 Services for the Remote and Local Users in the National Library of Russia

The National Library of Russia (NLR) is a highly valuable object of Russian cultural heritage (and an integral part of Russian scientific and cultural potential). It is one of the largest libraries in the world in respect of volume of stocks and services. RNL has more than 33 million items, welcomes almost 1.5 million users each year, supplies over 12 million units of storage and organises more than 1.5 thousand exhibitions.

The information services in the National Library of Russia have very long traditions. But now we can see several changes. The implementing of computer-based library technologies was a big step forward for new and modern information servicing.

Today the goal of the information services in the National Library is to provide information to meet users' needs, to provide users with complete, accurate answers to information queries regardless of the subject and complexity. We are trying to develop information, reference and directional services consistent with the goals of our library.

2 Components of the Information Service in the NLR

There are several components of the information service in the National Library of Russia.

1. The first one - is the General information services for local users
2. – is the Reference service (general) provided by staff
3. – is the Reference service by subject provided by staff
4. – is the Online information service
5. – is the Internet-based information services

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General information services for the local and remote users include:

1. Providing the directional information to all users by staff on the information desks (self-help leaflets)
2. The answering of simple directional queries relating to locations, policies and services of the library.
3. Dedicated telephone reference service (not located at the reference desks).
4. Users' education programmes.

Traditionally, there are two main levels in the local readers' training activity in the National Library.

The first level is library orientation for the newcomers – inexperienced users with the minimum information-seeking skills. The keynote themes of the library orientation programmes are:

- the collections and services of the National Library
- rules of admission, necessary documents and opening hours.

The second level of users' education programmes is the bibliographical instruction or information training.

The key programmes are:

- Information and search tools in the NLR
- How to use traditional catalogues of the National Library (alphabet, systematic and subject)
- Lessons for conducting an OPAC search
- Subject-oriented databases for the scientific researches
- The Russian search engines or how to find helpful information on the Internet.

3 Subject-oriented Reference Service

1. Reference desks (author/ title queries, fact-finding enquiries, bibliographical definitions).

The reference desks in the National Library of Russia are highly visible service points located in different reading rooms. As you may know, the

main principle of library and information service in the National Library is the subject principle. So, the reference desks are located in 4 scientific and 4 common reading rooms – social sciences and economics reading rooms, medicine and biology, technical sciences and humanities reading rooms. The reference desks are located very close to the reference collections (dictionaries, encyclopedias, almanacs, yearbooks, handbooks and directories, general fact books, biographical and geographical sources, and different types of bibliographical resources – current, retrospective, subject, union catalogues and so on).

Now all reference desks are equipped with personal computers with an access to all local electronic resources as well as to the Internet resources. At the moment the use of CD-ROM products is growing continually.

2. Ready reference answers faxed or E-mailed to home or office.

The Reference and Bibliography department of the NLR provides the remote enquiry service to those requiring general information about the Library's reading rooms and information services, carries out online catalogue checks and answers fact-finding requests. The answers are sent by fax or by E-mail.

3. Research enquiries

The reference librarians are also responsible for the research enquiries received by the National Library. Special kinds of users' requests need highly-skilled staff.

4. Bibliographical instruction programmes for specified groups of users include the training courses and instructional sessions for researchers and scholars.

4 Internet-based Information Services

Traditionally, information services were limited to the boundary of library walls, but over the past few years users have become increasingly involved in using information resources not limited within the library buildings. The Internet and Web technologies changed our perceptions about the traditional library and information-reference services.

NLR's first experience in adapting Internet technology dates back to 1997, when two Internet classes were opened.

1. Internet information access points (Internet classes)

2. Online searches (online information service)

Today there is an increasing number of reference and bibliographical resources available online, which are in large part based on print indexes and bibliographies translated into electronic format. We offer the online search services, where a reference librarian or other professional searcher does the online searching for patrons.

3. Basic information resources available through the National Library of Russia Web Page.

4. Electronic reference service (answering of E-mail questions)

The service answers only two types of questions.

1. – is the finding of certain editions in the collections of the National Library (with the location numbers)
2. – the subject searching .

To submit a question, the user is requested to fill in several fields given on the query form, located on the Website. These fields include:

- family name
- home or office address, call number
- the motivation (it may be the research study, student thesis and so on)
- reply E-mail address
- subject of the question
- resources previously consulted
- send/ clear forms

5. Chat reference service (live virtual reference assistance)

We are working on the Pilot project of the National Library of Russia and the Slavonic Library of Illinois University (USA).

6. Electronic document delivery service.

The electronic document delivery service was launched 5 years ago on the basis of inter-library loan department. We have wide experience in that area and it is very useful for our users.

5 Basic Information Resources Available Through the NLR Web Page

I would like to say that the main information of this source is our electronic catalogue.

For example:

- Books in Russian – covers Russian-language books acquired since 1986 by legal deposit, purchasing, gift or exchange. The total volume of all bibliographical records near 800,000 records.
- Dissertation Abstracts database comprises dissertation abstracts dating from 1989 to 1997. The bibliographical records for all the theses held since 2000 are included in Books in Russian Catalogue.
- Cartographic Materials databases provides access to the information about maps and atlases acquired by the Cartographic Division since 1994.

6 The Online Electronic Resources for Special Research

6.1 Russian Eighteenth-Century Civil Printed Book (1708 - 1800)

A database designed by the National Library of Russia as an integrated electronic version of the Union Catalogue of Russian Eighteenth-Century Civil Printed Book, 1725 - 1800 and Records of publications printed in the reign of Tsar Peter I. The volume is about 9,000 bibliographical records.

6.2 Petersburg Readings (1992 - 1999)

Petersburg Readings database provides listing of all articles of annual conference proceedings on Petersburg studies published by the Association of Saint-Petersburg Explorers in collaboration with other key institutions and organisations of the city between 1992 and 1999.

6.3 The Scanning Copy of the General Alphabet Catalogue (GAC)

An important project of the National Library of Russia is the transformation of the General Alphabet Catalogue in the digital image form. I would like to mention only the main features very briefly.

1. The chronological coverage from 1725 - 1998.
2. The total number of digital images of bibliographical images of bibliographical cards – 8,000,000 cards.
3. The types of documents – monographs, albums, dissertation abstracts, microfilms, collected standard-technical documents, periodicals and serials.
4. The catalogue entries contain full details of the editions.

7 Information Centre – Features

The new Information Service Centre with Book Store was opened in September 2001 under the financial support of the World Bank and additional funding of the Government of Russia.

The Project of Information Centre is an integral part of the National Library of Russia Culture Centre project incorporating the Information Service Centre with Book Store, Book and Library Museum, Music Room and Presentation Area.

The main goal of the Information Service Centre is the improving of information services to all users regardless of their age, social status or occupation on a fee base.

The Information Service Centre includes three services areas in a multilevel service concept:

1. Bookshop area for the retail sales of high-quality printed materials in the Book Salon.
2. Remote access area – for providing specialised electronic services, including online information searching, Internet navigating and CD-ROM-searching.
3. General reference service area for request handling, CD-ROM searching by staff, quick-reference computer searching (OPAC, local databases), faxing and xeroxing.

7.1 Information Centre – Remote Access Area

Basic functions:

- online information service (in the domestic and foreign databases)
- Web- seaching and navigating
- E-mail post office

7.2 Information Centre – General Reference Service Area

Basic information services:

- CD-ROM searching by staff
- quick-reference computer searching (OPAC, local databases)
- faxing and copy.

Prototyping of Language Library Services in Singapore

Pushpalatha Naidu*

1 Introduction

The island of Singapore, a tiny dot on the world map, is strategically located between Malaysia and Indonesia. Founded by Sir Stamford Raffles in 1819, Singapore became a sovereign and an independent nation on August 9, 1965. On December 22 the same year, Singapore became a Republic.

Stretched over a land area of 685.4 square kilometres, Singapore has a population of 4.16 million. The four official languages of Singapore are English, Chinese, Malay and Tamil. English is widely spoken and is the language of administration and business. Mandarin is commonly spoken amongst the Chinese, along with dialects such as Hokkien, Teochew, Cantonese, Hakka and Hainanese. The Indians speak Tamil, Malayalam, Telugu, Kannada, Punjabi, Hindi, Bengali and Gujarati.

The medium of instruction in schools is English and the learning of a second language, be it Malay, Tamil, or Chinese is compulsory. The basic education structure is a six-year primary school, a four-year secondary school, and a two-year junior college for those preparing to enter higher education.

2 The National Library Board, Singapore

The National Library Board Singapore (NLB) was established on September 1, 1995 to spearhead the transformation of library services in Singapore in the Information Age. Its mission is to continuously expand the learning capacity of the nation so as to enhance national competitiveness and to promote a gracious society. Through a network of borderless libraries and information resources linking all publicly funded libraries in Singapore, NLB provides services and learning opportunities to support the advancement of Singapore through computer networking. Its service philosophy is to deliver a world-class library system which is convenient, accessible and useful to the people of Singapore. It has innovatively

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exploited technology to enhance its services and operations thereby creating an enriching experience for the user. The NLB oversees the management of the National Library, 2 Regional Libraries, 20 Community Libraries (9 located at shopping malls) and 20 Community Children's Libraries. Through these libraries and those of its partners, the NLB ensures that users have access to a rich array of information services to support lifelong learning.

The NLB is modern, dynamic and innovative in its delivery of library and information services. This approach is embodied in its logo. The transition from bold solid pages to a pixelated format depicts the evolution from print to electronic media, representing NLB's current technology focus and its commitment to be at the cutting edge of technological development. It also reflects the integrated computer network system, which allows library users easy, quick access to information and greater convenience in borrowing and returning books. These are qualities that are also the very foundation of the Board's vision of Library 2000.

The importance of reading for recreation, career advancement and education has been well recognised by all Singaporeans. The provision of a good collection of reading materials in libraries is one sure way of sustaining regular reading habits.

The Library 2000 Report recommended that the NLB should expand its collections and services in the official ethnic languages of Singapore, i.e. Chinese, Malay and Tamil, to help deepen Singaporeans' understanding of their respective cultures, history and heritage. This is in line with the NLB's objective to expand the learning capacity of the nation and work towards a knowledge-based society. The Library 2000 Committee also recommended that new ideas and concepts could be tested and assessed through prototyping and step-by-step implementation. The prototyping approach is an important step as it allows decision-makers to gauge the responsiveness of the users and assess feasibility before deployment on a national scale. Hence, successful services and concepts can be adapted or replicated in existing and new libraries. (NLB, 1994)

The NLB set up the Chinese, Malay and Indian Library Services Advisory Panels in 1998 to advise NLB on the policies and strategies to develop the three-language library services; and to promote the reading interest in the ethnic languages, and to implement the Library 2000 Report recommendations. The different language panels decided to set up the Chinese, Malay and Indian Library Prototype Services to serve their respective communities in Singapore.

2.1 Benefits of Prototyping

The prototyping was aimed at enabling the NLB to play a significant role in helping Singaporeans to improve the learning of their mother-tongue languages and literature, and gain a respectable knowledge of their ethnic culture. This is also in line with the NLB's mission to expand the learning capacity of the nation, and to help Singaporeans understand their heritage.

The prototype libraries would help realise NLB's role in bridging the information gap between Singapore and the rest of the world, and act as a one-stop information centre for the ethnic communities outside China, India, Malaysia and Indonesia.

3 Chinese Library Services

3.1 Prototyping Chinese Library Services

The idea to set up a prototype Chinese Library Services was mooted by the then Minister for Information and the Arts, Brigadier General George Yeo in June 1997. He proposed setting up a library comparable to that of the library in Suzhou or Shanghai. Hence, the Chinese Library Services was set up at Tampines Regional Library in April 1998 as a first step to implementing the Library 2000 recommendations. It developed a strategy and a medium-term plan to enhance the overall Chinese collections in print and non-print, and in promoting interest in Chinese culture. The Chinese Library Services also established close cooperation with the National Library of China and Shanghai Library.

The CLS, designed with an ambience filled with Chinese cultural symbols and colours, boasts a wider range of titles in Chinese than any of the other community libraries. The collection includes more Chinese newspapers and magazines as well as a special collection of economic and trade information on China, the Shanghai resource collection, obtained in exchange with the Shanghai Library, Singapore collection, family and parenting, pictorial series of Chinese classics and the arts.

The multimedia stations are decked with CD-ROM titles of award-winning films from China. Nine multimedia stations allow users to access Chinese Websites and CD-ROMs.

The prototype Chinese Library is equipped with an enhanced Chinese collection of 92,000 volumes, 210 magazine titles, and 10 titles of newspapers.

Materials	Before Renovation	After Renovation	% Increase
Books	77,000 volumes	92,000 volumes	19.5%
Reference Books	1000 volumes	1800 volumes	80%
Newspapers	5 titles	10 titles	100%
Magazines	118 titles	210 titles	78%

Multimedia Services

Services	Before Renovation	After Renovation
Multimedia Stations	Nil	5 (adult) 4 (junior)

With an increase in the volume of Chinese titles, the floor area allocated for Chinese collections also increased from 230 sq metres before the renovation to 300 sq metres, i.e. a 30 per cent increase in space.

With the prototyping of the Chinese Library Services, the Tampines Regional Library saw an increase in visitorship and the number of loans. The new services were well received by the public. The monthly loans on Chinese materials increased by a large percentage ranging from 73 per cent to 124 per cent within the 6 months after the upgrading. This indicated that the enhanced collection was fully utilised by the public.

3.2 Programmes at the Library

The Programme Development Group organises programmes in all the four official languages with the objective to:

- a) create awareness and promote library resources and collection;
- b) create awareness of the different cultures and enhance cross-cultural understanding; and
- c) attract potential non-English speaking sector to libraries;

Value-added Chinese programmes organised in collaboration with local groups on language skills, talks on Chinese literature, wellness programmes, family, culture and children's enrichment programmes were well patronised.

4 Malay Library Services

4.1 Introduction

Malay readers have been actively using and borrowing books and other materials as well as learning new experiences by visiting public libraries. The NLB provides about 7.7 per cent of its total collection in Malay for all age groups in our regional, community and children's community libraries. In its efforts to enhance its services to the Malay readers, in January 2001 the NLB chose the Bedok Community Library (BECL) to be a prototype of the Malay Library Services (MLS). Centrally located in Bedok and well surrounded by clusters of comparatively high Malay population, the NLB hoped to create a greater awareness and instil the importance of library and reading among the Malays. Through its collection and multimedia services, the BECL aimed to promote a good reading habit, especially among children, and continued to lure the youth and adults with its attractive programmes.

4.2 Highlights of Prototyping

The Bedok Community Library closed its doors to the public in January 2001 for upgrading works as part of the NLB's development plans to furnish older libraries with new and convenient services and facilities. After 10 months, the standalone Bedok Community Library opened in November 2001.

The 176 square metre area chosen for the prototype project was developed to reflect the Malay culture and tradition with custom-made shelves and décor.

With a start-up collection of 30,000 print and non-print materials in November 2001, the collection expanded to 40,000 materials a year later. This is about 22 per cent of the total collection in the library. Bedok Community Library's Malay collection is the largest among all the Malay collections in regional and community libraries in Singapore.

The revamped library boasts of a café, more multimedia stations, self-service borrowing stations and a 24-hour bookdrop service for the convenience of library users.

Other highlights of the prototyped Malay Library Services included the introduction of the Malay Library Windows called 'Jendela Pustaka', and a greater variety of outreach programmes and activities. The Malay Library Windows in NLB's E-Library Hub offers hyperlinks to useful

Websites in the Malay language on subjects of interest to the Malay community.

The following table shows the pre and post-upgrading Malay loan statistics at BECL.

Months	2000/2001 Loans	2001/2002 Loans	Difference Loans	Percentage % Increase
November	4,552	7,082	2,530	55.6%
December	2,984	6,868	3,884	130.2%
January	2,071	8,799	6,728	324.9%
Total of 3 months	9,607	22,749	13,142	137%

5 Indian Library Services

5.1 Introduction

The Ang Mo Kio Community Library (AMCL) located in the northern region of Singapore serves mainly the residents of Ang Mo Kio and its peripherals. This library was chosen as the prototype library for the launch of the Indian Library Services (ILS). The Indian Library Services at the upgraded Ang Mo Kio Community Library is the NLB's efforts and initiative to enhance the Tamil collection and serve the ethnic community better. The implementation of the Indian Library Services at AMCL serves to promote, deepen and cultivate Singaporeans' understanding of the cultures and history of the Indians. Through collections, programmes and multimedia services, the library aims to promote regular reading habits among both the young and old, and hopes that they will make reading a lifelong habit. It is also envisioned that the library will help to foster better understanding of the Indian community and culture among the other races through easily accessible programmes and collections.

AMCL was chosen as the prototype library for the launch of Indian Library Services because of its comparatively high Indian readership and community in the Ang Mo Kio Town area. After being closed for 9 months, the upgraded AMCL reopened to the public on January 26, 2003 and received overwhelming response.

6 Recommendations of the Indian Advisory Panel

The Advisory Panel for Indian Library Services advised NLB on the improvement of the Indian Library Services to these ends. The Panel initiated

several improvements to the collection process and the promotional efforts. It also discussed certain major developments to expand the knowledge base of the Indian collection and also help position NLB as a leading international resource centre for all India-oriented activities. These developments included among other things (i) creation of a Tamil digital library (to be followed by resources in other Indian languages); (ii) expansion of the Tamil reference collection to cater to major new needs, e.g. alternative medicine and Tamil computing; (iii) expansion of the audio-visual collection to incorporate the latest in Information and Communication Technologies; (iv) inclusion of non-book materials such as paintings, sculptures, fabric and artifacts in the library building.

7 Objective

The aim of prototyping AMCL was to make it a one-stop library for the Indian community with the most comprehensive collection in terms of lending material, reference collection, multimedia services and community outreach programmes. By doing so, NLB was making a serious attempt to reach out and meet the needs of the community in a significant manner, and also to stress the fact that NLB is not just a library for Singapore but also an international resource centre for the world.

8 Highlights of Prototyping

8.1 Collection Development

The collection in the Indian Library Services section (ILS) at Ang Mo Kio Community Library (AMCL) is made up of both Tamil and English books. Since the Indian community is made up of several sub-Indian language groups, the bilingual collection is meant to serve the larger Singapore community and the other races rather than the Tamil community alone. The collection in ILS at AMCL is in the ratio of 90 per cent Tamil and 10 per cent English. The 10 per cent comprises books in English on anything Indian. The bilingual collection would be an indication that the Indian Library Services is for all Indians. More importantly, this would enable other races and users of AMCL to learn more about Indian culture and civilisation.

An area of 223 square metres was reserved to accommodate all reference and lending material for adult and young people. The materials include fiction, non-fiction, comics, magazines, journals, newspapers, Singapore collection, reference materials, videotapes, CDs, VCDs and CD-ROMs (educational/games).

The start-up collection of 12,000 print and non-print materials in Tamil as of April 2002 was expected to increase to 15,000 by January 2003, making AMCL's Tamil collection the largest among all the Tamil collections in any regional or community library in Singapore. The collection included both what was available in the bookseller market in Singapore as well as those that were not. The total collection of Tamil books as of March 2003, two months after the reopening of the library was 21,739 as compared to 10,797 books in March 2002, which is a 101 per cent increase.

8.2 Loans

Just after the upgrading, Tamil loans made up 3.46 per cent of AMCL's total loans, which is much higher than the average figure of 1.1 per cent across NLB. Among the Tamil loans, Adult books contributed to the highest loans (58 per cent), followed by Children's loans (24 per cent) and Young People's loans (18 per cent). Tamil fiction accounted for 53.6 per cent of the total loans. Popular subjects are cookery and religion.

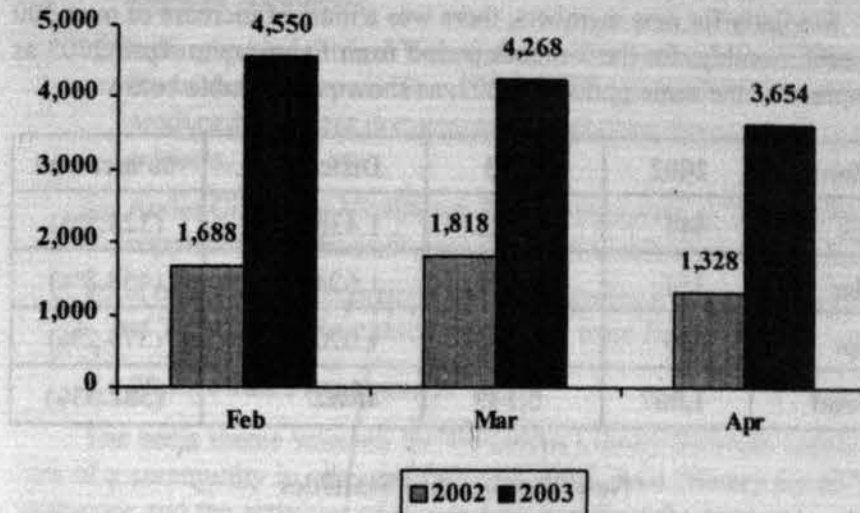
The following table shows the pre and post-upgrading Tamil loan statistics at AMCL with the overall statistics for the library in brackets:

Months	2002		2003		Difference	
	Loans (Tamil Books)	Total loans (%)	Loans (Tamil Books)	Total loans (%)	Loans (Tamil Books)	% Increase
February	1,688 (62,908)	2.68 %	4,550 (106,136)	4.29 %	2,862 (43,228)	169.5% (68.7 %)
March	1,818 (90,351)	2.01 %	4,268 (136,697)	3.12 %	2,450 (46,346)	134.8 % (51.3%)
April	1,328 (64,649)	2.05 %	3,654 (117,402)	3.12 %	2,326 (52,753)	175.1 % (81.6%)

The usage of the Tamil collection showed a clear increase just after the opening of the ILS at AMCL in February 2003. Owing to the outbreak of SARS in March, loan statistics dipped in March, April and May.

If we were to compare just the Tamil loan figures before and after the upgrading, Tamil loans have increased by an average of 158 per cent.

The following bar chart shows the same set of Tamil loan statistics of AMCL before and after upgrading:

AMCL Tamil Loans Comparison 2002 and 2003 (volumes)

Compared with other libraries, the increase in Tamil loan statistics of AMCL is a clear indication of the impact of the prototyping of the Indian Library Services. AMCL ranked first in terms of the highest Tamil loans among the libraries of NLB during the 3-month period between February and April 2003. It ranked 7th in 2002.

Tamil Loan Ranking for Top 8 Libraries (February-April 2003)

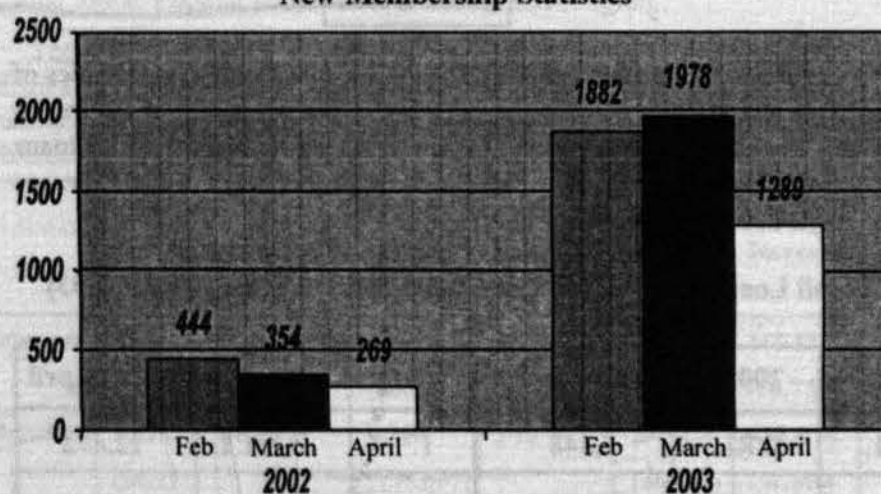
Rk	2002	Feb – April	Rk	2003	Feb – April
1.	WRL	7,848	1.	AMCL	12,472
2.	BBCL	6,570	2.	WRL	7,720
3.	BMCL	5,796	3.	BBCL	6,973
4.	JECL	5,355	4.	JWCL	6,301
5.	JWCL	5,273	5.	JECL	5,732
6.	YICL	4,881	6.	CCL	5,150
7.	AMCL	4,834	7.	YICL	5,030
8.	BECL	4,380	8.	BMCL	4,379

8.3 New Members

Similarly for new members, there was a marked increase of over 300 per cent monthly, for the 3-month period from February to April 2003 as compared to the same period in 2002, as shown in the table below:

Months	2002	2003	Difference	% increase
Feb	444	1,882	1,438	(323.8%)
Mar	354	1,978	1,624	(458.8%)
Apr	269	1,289	1,020	(379.2%)
Total	1,067	5,149	4,082	(382.5%)

New Membership Statistics



The prototyped Ang Mo Kio Community Library has the following special features:

- A copy of every Tamil book available within the NLB system.
- A "book to film and film to book" section, as movies have enormous appeal to the Indian audience and could be used to attract library users.
- Books on Indian martial arts – as this field is gaining popularity among the young and also lends itself for the creation of interesting events.

- d) A section on business-related books with regard to small and medium businesses.
- e) A Singapore-centric AV section consisting of audio and videotapes from the Singapore Broadcasting organisations which have produced excellent documentaries and docu-dramas on Singapore subjects.
- f) Audio CDs from Mediacorp Radio Singapore on 'Thirukkural' to supplement the book format that is available in our libraries.
- g) A newspaper and magazine corner featuring a substantial collection of Tamil magazines and newspapers from India.

8.4 Theme and Programmes

The basic theme selected for the Indian Library Services corner was one of a community in conversation with itself. As a "library for all", the ambience and the activities of ILS at AMCL reflect the attempt to engage the members of the community to interact with each other.

Other types of programmes such as storytelling and talks based on print-to-screen are major big attractions. This is also a platform where many other interests are discussed, including arts, culture and social and economic issues. All these programmes, whether they are in Tamil or English, are connected to the collections that the Indian Library Services provides. This is also in line with NLB's aim to expand the learning capacity of the nation and stimulate intellectual development.

Apart from philosophy, art and other intellectual elements, Indian traditions and practices that are part of everyday living are also promoted. The sounds of India are equally diverse and enchanting, ranging from the simple yet complex rhythms of the tabla to modern day Indian cinema pop music. A wide range of musical instruments has lent themselves to artistic display. Visitors can touch and feel these instruments. These are tangible aspects of the Indian culture and identity that can lead to a holistic learning and understanding experience that the Indian Library Services provides.

Undoubtedly an intellectual audience is naturally drawn to the Indian Library Services. However, to tap the mass audience, especially the hard to reach and under-served segments, programmes and activities of quality and integrity are carefully packaged and marketed. For a library to be successful, it needs to ensure that people of all ages and interests will find an impetus to make use of its resources. The vision is to develop the knowledge, interests and involvement of the mass audience with repeat

visits and usage, and eventually move the new converts towards the intellectual platform as well.

8.5 Highlights

8.5.1 Tamil Catalogue

The Tamil card catalogue has been fully computerised and retrieval of Tamil titles can be made by typing in Tamil. When AMCL re-opened in late January 2003, only one-third of the Tamil records had been computerised. The total number of records, which have been retrospectively converted, is about 19,000. As the system is Unicode enabled, the Tamil titles can also be retrieved in Romanised form. The computerised system is only available in the ILS at AMCL. The system has been successfully implemented, and recommended to be rolled out to the other branches.

8.5.2 Music Post

For the first time, Indian music is offered at the Music Posts. Both Indian instrumental and pop music are available at these posts. A music sponsor replaces the CDs with new ones once every three weeks. This feature is drawing the youngsters into the library.

8.5.3 Community Book-Bin

The book-bin allows the Tamil-speaking community to bring their own books in exchange for someone else's books that are available in the bin. This allows for community cross-exchange and at the same time reading of books not available in the library. So far, the community has been participating quite actively by dropping the collection from their homes and exchanging them for those in the book-bin. Besides enriching NLB's fiction and other popular titles, this exchange is a form of subtle conversation within the community telling others what they like to read and share.

8.5.4 Ambience

Excerpts of writings of great Indian thinkers and poets inscribed on palmyra leaves are on display. This is to drive home the point that thousands of years ago ancient Hindu scriptures and philosophies were written on palmyra leaves, which are still available to this day.

8.5.4 Décor

Subtle Indian décor was incorporated into the ILS at AMCL to create an ambience reflective of the rich Indian culture, heritage and mind sport. There is a balance in the collection with the rare artifacts and intellectual inputs versus the ones with mass appeal to make sure that all ages and segments of the community are served. The collections go beyond books

to experiential learning, the theme of Ang Mo Kio Community Library, through the multimedia and listening stations, creating an overall fusion and enrichment.

9 Promotional Activities

The NLB is continually working in consultation with the Indian Library Services Advisory Panel to identify new and effective programmes and activities in harnessing the energies of the Indian community.

Thus far, the Tamil programmes have been well received. Examples of programmes that attracted a sizeable crowd are Beauty Secrets from the Indian Kitchen, Yoga, Indian Cuisine: The Healthy Way and Child Birth and Child Care.

NLB has been fortunate in getting very generous publicity over the Tamil mass media. Representatives from these organisations have been and are members of the Indian Library Services Advisory Panel, and the Indian Library Services staff has been consulted regularly by these organisations. A good example of media support is the weekly programme on Tamil radio that features callers who have borrowed books from NLB libraries to discuss and share what they have read with the listeners. Besides, NLB also provides synopses of new reference materials and titles of new children's books and CD-ROMs, which are publicised over Tamil Radio Oli 96.8 FM.

Promotional activities are a never-ending process. A lot more can still be done, including the formation of reading circles for children. Also, in order to stay relevant and effective, NLB and Indian Library Services Advisory Panel (ILSAP) will have to continually review and reinvigorate the promotional agenda. The engagement of the Indian Civic Organizations (ICOs) and Tamil Media Organisations (TMOs) have dramatically altered the pace and scope of promotional activities. The challenge is to keep them engaged.

10 Conclusion

The main learning points that emerged from NLB's ventures into prototyping of language library services can be summarised as follows:

- It is important that sufficient budget is allocated for the maintenance of the collection, services and ambience of all the prototyped language libraries so that they continue to draw visitors and enjoy high book loan rates.

- Engagement of the community with the strong support of the various Advisory Panel members can help mobilise the respective language communities to pay greater attention to and make use of the additional services and resources at the prototype libraries as well as the other libraries. In this way we can also continue to involve and leverage on the community.
- Staff interaction, team spirit and cooperation among all NLB staff are crucial in sustaining the increasing loan trends and visitorship in the prototype libraries.
- With the completion of the Tamil catalogue, the online system is ready to be rolled out to all the other libraries.

The success of prototyping of the language library services in Singapore has added a new dimension to NLB's other achievements. NLB hopes to leverage on these experiences and continue to provide enhanced and even more relevant services to its user community.

Music Libraries in India in Perspective of Legal Deposit

Aparna Rajendra*

1 Introduction

In the process of evolution a monkey evolved into a human being. This human creature having the ability to think seemed to be different than the animal. He then became cultured and civilised. In the course of time man started to develop his mind and thoughts and shared them with others. This resulted in the growth of language and literature. From the urge to preserve the knowledge for posterity developed the libraries and library systems.

National Libraries or libraries which identified as National Libraries are supposed to be the apex of the library system of the country. The National Library functions as a deposit library of the country. This function of the library makes it national. The National Library becomes the repository of the national output. Along with the other functions this is the major function of the library. The National Library has the responsibility to acquire the published heritage of the country and preserve this for use by all. This becomes possible because of legal deposit.

2 What is Legal Deposit?

Legal deposit is the means by which a comprehensive national collection is gathered together as a record of the nation's published heritage and development. And also a statutory provision, which enforces legal binding to publishers to deposit their works in designated institutions.

Legal deposit should be an efficient means for developing national collections of both the print and non-print material. "It is also a means for a country to commit itself to Article 19 of the Universal Declaration of Human Rights, which gives to everyone "the right to freedom and receive and impart information and ideas through any media regardless of frontiers."

Thinkers like Maurice B. Line and Dr. S. R. Ranganathan also stressed the deposit factor that characterises a library as a national one. Dr. John

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Lunn, based in Canada has prepared the "Guidelines for Legal Deposit Legislation" in 1981. UNESCO with the help of CDNL has undertaken the updating of this document.

It becomes the duty of the government to see that a library will be set up or a library will be identified as a depository of a national heritage.

For nearly five centuries different libraries all over the world carry out the activity of preserving the nation's heritage. France is supposed to be the pioneer in this respect. In most of the countries the National Library of the respective country is responsible for this task. Somewhere some other library is entrusted with this particular role. In a few cases the organisation is nominated by the government to become legal depositories of particular material.

Since there is a change in the form of information carrier the change has to be there in the legal deposit legislation. The shift from book to document or information container is in tremendous forms. Print, non-print, voice data, audiovisual and multimedia are only a few such instances.

Considering this change, many countries have amended their legal deposit acts. A few are mentioned below:

Name of the Country	Year of Amendment
Germany, Indonesia, Norway	1990
France	1992
Sweden	1994
Canada	1995
South Africa	1997
Denmark	1998
Japan, Finland	2000

Australia, Slovenia, Spain, Switzerland and UK are also in the process of modifying the same.

3 Music Libraries

The present paper focuses on the music aspect from the legal deposit point of view and especially in the context of India.

Music is an inevitable part of human life. People love music and even if they do not actively perform or participate can at least enjoy it. Music comes in forms of long playing records, cassettes, audiotapes and various forms of compact discs. With the advent of technology it has become possible to store the musical data in digitised form. Music has been categorised as Print Music and Published Music. This is very relevant to western music. Storing and preserving of the sheet music might have given rise to music libraries and librarianship. Sound music also became part of the preserved material. Hence music libraries.

There are five types of libraries identified by the experts as music libraries:

- Public Libraries with separate music sections
- Libraries of music institutes
- University Libraries with music sections
- Repository Libraries of Music
- Radio and television libraries

All types of music libraries are prevalent in Germany, Austria, Australia, France, United Kingdom, United States of America, New Zealand and many others. Many of the countries have incorporated recorded music as an item for preservation in their legal acts. A few of them are:

Australia (interest has been shown but it is not seriously worked out)
Czechoslovakia
Great Britain (2003)
Korea
Canada
Germany
United States
South Africa
France

4 Indian Scenario

The Indian National Library at Calcutta is the official legal depository of India. In 1954 The Delivery of Books (Public Libraries) Act, 1954: No. 27 was enacted which was amended by the Delivery of Books (Public

Libraries) Amendment Act, 1956: No. 99. By this law the National Library, Calcutta is entitled to receive a copy of every publication brought out by anyone anywhere in the country. By the amendments the newspaper was incorporated in the documents to be deposited. After that no amendment has been witnessed so far.

India has a very rich musical heritage. Indian music is as old as the Vedic period. Samved is supposed to be the originator of Indian classical music. Sharangdeo and Bharatmuni from ancient India are the greatest thinkers who have made tremendous contributions to Indian music and consequently to the development of music. Since then Indian music has developed in leaps and bounds. Pure classical, semi-classical, dhrupad and dhamar music, light music, folk music, film music, Sufi music, Ravindra music have emerged and have fused tremendously. North Indian music and South Indian music are prevalent in the country claiming to be very rich. Many agencies like All India Radio, Television Centre, Private Institutes, Music Training Institutes, Commercial Companies, private supporters of music and many others like them promote music generation constantly. The generation of music is enormous and at high speed. There are a large number of libraries and private collectors of music collecting very rare recordings but at the same time there is no organised effort to preserve this musical heritage. Considering the nature of Indian music the music library system is badly required in the country. This inadequacy has been correctly pointed out by Sisir Kumar Mukherjee in his article as follows: "We, in this developing country, remain contented with this boastful development of a Bibliographic Saga, but we can hardly claim any achievement in the sphere of the Music Library Movement, the concept, having no foothold on this culturally affluent land of music heritage."¹

5 Conclusion

To establish a proper music library system in the country many steps have to be taken. One of them will be to amend the Delivery of Books Act and to start the National Music Archives. How it will be feasible and possible can be studied extensively and with the cooperation between the government and citizens of the country a well-established Music Library System of the country can be established of which we will be proud.

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Digitisation of Manuscripts of Old and Rare Books: The National Library Experience

R. Bhattacharjee*

1 Introduction

The National Library of India, located in Kolkata (Calcutta) is the largest library in the country. It is an institution of national importance under the Department of Culture, Ministry of Tourism and Culture, Government of India. The National Library came into being in 1948, with the passing of the Imperial Library (Change of Name) Act 1948. In the same year, it was shifted to Belvedere Estate, its present location, which was the former viceregal palace. It is now housed in three separate buildings with a separate preservation laboratory. It was formally opened to the public on February 1, 1953 by the late Maulana Abul Kalam Azad, the then Union Education Minister. The origin of the library, however, can be traced back to March 1836, when the Calcutta Public Library was opened to the Public at 30 Esplanade Row, Calcutta. Subsequently the Calcutta Public Library was merged with the Imperial Library in January 1903.

The Library's responsibility is to collect, disseminate and preserve the printed heritage of the country. It is also one of the oldest institutions of the country focused on the conservation and maintenance of the bibliographic documents in various fields of knowledge. The National Library of India is celebrating its centenary year with some new initiatives and challenges. Digitisation of manuscripts is one such initiative the library has taken up responding to the growing use and adaptability of information technology to library-related activities.

The digitised library is an organised collection of digitised materials with methods of access, retrieval, selection, organisation and maintenance of collections.

The first principle of policy for digitisation is that it should be confined to the material (1) which is unique, rare and of artistic and heritage value:

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(2) the users for which are widespread geographically and temporally and (3) the retrieval of information is cumbersome and copies of such material cannot be supplied to the users quickly and easily. The manuscripts and rare books in the collections of libraries are thus the natural candidates for digitisation.

2 Technologies Available to Undertake the Task of Digitisation

Firstly, the extraordinarily rapid rate of obsolescence coupled with the developed world's clamour for latest software and hardware lead to ever emerging new standards and norms. There are genuine apprehensions that the whole exercise may become meaningless if the standards and benchmarks change in a few years. The often quoted example is one from the USA where the census data stored in the 1960s using the latest available standards at that time is no longer retrievable because the devices that could read such information are no longer available.

Secondly, an equally serious obstacle to the digitisation from the economics perspective is the choice of appropriate technology. A spectrum of technologies (proprietary or otherwise) exists in the market each of which has its own limitations and advantages. One needs to be careful in selecting the technology with full knowledge of its limitations not only from the point of view of economic viability but also its future acceptability and adaptability.

Thirdly, it is the limitations of technologies particularly in the Indian context. The technical complexities have been the primary reason that libraries are slow to respond to digital solutions. In fact, it is because of these reasons that many digital library projects have floundered even in the developed countries. Digitising and converting the images to information are difficult and costly exercises. The computer hardware and particularly software which perform these functions are good and practical but less than perfect with no guarantee that these would not become obsolete in the near future. The aim of a digitisation policy is thus to try to minimise the imperfections to the extent possible and control the external environment as far as possible.

Considering that the digital technology would continue to evolve and there are inherent uncertainties associated with use of any particular technique or software. The second principle of digitisation policy suggested is that pilot projects involving up to 10 per cent of the collections shall be taken up by each organisation.

3 The Scope of Work, Standards and Benchmarks that Need to be Adopted

The work involved in digitisation are (1) actual scanning of the documents (2) indexing and bibliographic organisation of scanned material and (3) making available the information for access and retrieval. Each of these activities give rise to a number of issues relating to standards and benchmarks. For example, what should be the resolution for scanning and actual display? Should the resolution for scanning be guided by the best available technology or by the economic factors? Whether the scanned document is amenable to full text access? What should be the file format in which the information is to be stored and presented? What would be the implications if the software or the hardware used becomes obsolete in the near future? What forms of indexing are required and preferred and in what form the information is to be provided to the users? While, most of these parameters are by and large guided by the limits of technology, the economic factors and the purpose for which the digitised information is collected are important considerations in setting the standards and benchmarks. For instance, if the purpose of digitising the collections is to preserve and conserve the collections for posterity, the resolution ought to be the best possible through technology. However, since this would have implications in terms of economics and storage space, perhaps the optimum resolution could be the one at which the digitised images are provided to the users. Similarly, the file format in which the raw data captured through scanning would be transformed would depend upon the available software, its flexibility of operation and compatibility with potential future technologies. The media through which access to the digitised information is provided (that is whether it would be Web enabled or provided on (CD/ DVDs) also depends upon the cost effectiveness of available technologies and the potential usage envisaged for the information.

3.1 Standards, Benchmarks and Technical Parameters to be Followed for Digitisation of Manuscripts and Rare Books

Technical Details

1. Input Specifications

- a. The size of the documents may vary from A2 to A4
- b. The documents for digitisation will be identified
- c. Documents will be appropriately prepared for scanning, including cleaning, numbering, etc.
- d. Documents are old/ rare manuscripts and may include charts, diagrams

2. Scanning

- a. The minimum resolution of the scanned image should be 300 dpi, centred to within 6 points (1/12 of an inch). In case of certain documents, which are in a precarious condition or brittle in nature, the systems and processes should be well-defined to ensure that there is no damage to the documents after the scanning. The vendor should have the state of the art equipment for the same.
- b. If required the vendor should have the capacity to do a high-resolution scan of appropriate dpi and then do a loss-less compression and bring it down to 300 dpi based on the condition of the documents.
- c. In case of any photographs or elements like sketches represented in the content, the vendor needs to have the ability to process the same separately with the NARA (National Archives & Records Administration of USA) standards.
- d. Charts, diagrams, photos, illustrations, etc are to be scanned separately wherever applicable.
- e. The content and colour images should be scanned separately and individually at optimum printing resolution (usually 240 to 300 dpi). Pixel depth can be 1 bit monochrome (black and white bi-tonal) 8 bit grey scale or 24 bit RGB.

3. Output Specifications

- a. The final output should be a G4 CCIT TIFF or a composite PDF to be supplied in CD Medium.
- b. Maximum acceptable tilt 0.4 NARA standard or latest.
- c. Uncompressed TIFF for each manuscript in one folder comprising separate files for each page (original master).
- d. Uncompressed cleaned TIFF for one manuscript in one folder comprising separate files for each page (cleaned master). The cleaning should include removal of all digital noise, centring, skewness, collating touch up (as is where basis).
- e. Digital cleaning and image corrections will be done as and when required, which may require to be costed separately on a case-to-case basis.
- f. For all manuscripts the output files should be in PDF organised in a tree structure following YYYY/MM/DD convention.

- g. Wherever there are images, separate TIFF, JPEG and Thumbnail files have to be created with relevant metadata.
- h. The On Screen JPEG resolution will be 600x400 pixels.
- i. Thumbnails should be of 1"x1" ratio
 - (i) For colour images it will be 24 bit per pixels
 - (ii) For the blank and white images it will be 8 bit grey scale

4. Storage Specifications

- a. All backups should be in reliable and standard quality CD/ DVD, etc.
- b. The data/ database/ Web application has to be loaded in storage area network/ server as decided by the user.
- c. Complete backup may be taken on appropriate storage media such as DAT drive.

5. Metadata

There will be two types of Metadata—Technical and Content

- a. Technical metadata will be provided by the vendor with appropriate documentation.
- b. Content Metadata will be as per current International Standards such as the Dublin Core and UNIMARC for field structure. It has to be created on the following fields like: author, subject, language, year of publication, accession number, keywords, etc.
- c. Cataloguing description shall be according to AACR II.
- d. Subject Heading would be in accordance with Library of Congress subject headings list, specialised Thesaurus and keywords to be modified in consultation with users wherever necessary to meet the local requirements.

Content Metadata will be prepared by the organisation using professional librarian, changes and additions on more subtle elements can be made from time to time by the scholars to be hired by the organisation. The preparation of the content metadata shall not be included in the scope of works for the agency selected for digitisation.

6. Database and Retrieval Specifications

- a. The vendor has to provide a retrieval software which can retrieve the content in about 15 types of data fields. Further a

page or a set of pages may be indexed with more than 10 key words, the retrieval software should have the capability of retrieving the same. The retrieval software should have a mechanism for a better anti-alised view of the content so that the reading is easy for the researchers. The software should also support the capability of searching/ viewing the vendor may be asked to demonstrate a prototype of such software package during the qualification time.

- b. The retrieval software should have the capability to run on Internet or Internet server and work with all standard browsers for the retrieval of the documents.
- c. Databases are required to be created for all for the metadata and corresponding data file identifiers for the PDF files. One complete and individual database entry per document is to be made for all appropriate fields for which information is available on the document. Open standard database will be preferred.
- d. Build indices for searching on various identified parameters. (For retrieving documents by metadata and different combinations of metadata).
- e. Required tools for managing and updating the databases along with complete documentation are required to be provided.
- f. The database/ application has to be Web enabled and should work with all standard browsers.
- g. The data and indices are required to be integrated with the Web server application.

7. Others

- a. The time period for digitising around 5 lakh A2 to A4 pages will be around 12 months.
- b. The work of scanning has to be done in-house.
- c. The vendor should be well versed with implementation of the AIIM/ ANSI/ NARA standards for digital archiving and should be able to demonstrate the continuous use of the specified quality methods to be consistent in quality.

4 Digitisation: A Timely Initiative

The issue has become important in recent times due to the advancement of information technology and its application in all phases of life. The

libraries, both public and research need to adapt to the emerging scenario and take full advantage of this technology. One of the major activities listed for the Tenth Five Year Plan of the country for the library sector is automation, modernisation and networking of libraries. Digitisation is seen to be one such job to achieve this target. Barring some isolated attempts by some institutions, organisations and libraries on a small scale, no major initiative has been taken so far in this direction.

Digital libraries have three principal advantages over conventional ones: they are easier to access remotely, they offer more powerful searching and browsing facilities, and they serve as a foundation for new value added services. In context where the collections are rare and unique, the digitisation also serves as a preservation tool. The case of the National Library falls mainly under the last category.

4.1 Digitisation and the National Library

The National Library undertook a pilot project entitled "Down Memory Lane" to digitise its rare and brittle books in the late 1990s. The English books that were published prior to 1900 and Indian books published before 1920 were taken into consideration. A local private agency was given the responsibility to scan and clean the documents. The library professionals were given the task of checking the scanned data to prepare citation cards for indexing in order to meet retrieval and reference needs. From February 1999 to June 2001, a total of 6601 books containing more than 2.5 million pages were scanned and archived in 548 CD-ROMs (in duplicate).

4.2 Digitisation of Manuscripts

In a way it is an extension of the earlier project, the content being the only difference. The National Library has in its possession a small holding of manuscripts representing some basic and important branches of knowledge. These manuscript collections are mostly part of some collections belonging to eminent personalities of India, which were donated by their heirs. The details of the holdings are as follows:

1. Paper Manuscripts: 3000 volumes approximately
2. Correspondence and diaries: 250 volumes approximately
3. Palm Leaf Manuscripts: 334 volumes approximately.

The following is the language-wise break-up of the manuscripts:

a. Arabic	:	681
b. Persian	:	955

c. Urdu	:	21
d. Bengali	:	162
e. English	:	255
f. Hindi	:	5
g. Tamil	:	370
h. Sanskrit	:	790

While the Tamil manuscripts in palm leaves are unique in character, the Arabic and Persian manuscripts bear beautiful illustrations, fine calligraphy and elegant bindings. Loose letters, diaries and some magnificent dossiers of correspondence represent interesting and authentic records of important personalities. The library has about 100 volumes of Xylographs comprising more than 800 items, presented to the Library by the Hon'ble Dalai Lama after his visit. These are block prints made from bark of rare Nepali trees.

Although the storage environment is satisfactory, the manuscripts are facing natural decaying (yellowing, brittleness, and wear and tear).

5 A Sample Project

A sample project was undertaken by the National Library with the objective of better understanding on the different issues pertaining to the digitisation of manuscripts. The main concern areas of this project were as follows:

1. Technology-related issue: The process, output and storage of the digital of the manuscript. The images need to be as close to the original as possible, with removal of worm and stain marks. The images need to be clear and the details of illustrations of pages have to be captured to the best possible extent.
2. Project economics: Cost-benefit analysis on the project with the long-term view on the scope of project in large scale.
3. Project Time-frame: The project estimation and determination of the time-frame of completion of digitisation of the entire collection of manuscript was imperative, and the sample project was undertaken to get the idea of time of completion which can be extrapolated for the entire scope of project.

An excellent Persian manuscript - *Tutinamah* was chosen for the sample project. The project was jointly envisaged and executed by the National Library and Trinetrix Technologies, a Kolkata based Information Technology Organisation.

6 About the Manuscript

Tutinamah: A fine and elegant copy of the older and larger version of the well-known tales of a parrot, by Diya-i-Nakhshabi (d. AD 751- AD 1350) who composed it by 1330 AD.

This beautiful copy, consisting of 52 stories, is written in clear Indian Taliq within gold and colour ruled borders and contains a beautifully illustrated headpiece. There are about 36 coloured exquisite illustrations created out of vegetable and organic dyes, some of which are interesting. The entire manuscript is based on hand made paper and is in bound form.

7 Project Set-up

The Project set-up was designated into two operational areas:

1. Image Capture Station

The image capture station consisted of a digital camera (Nikon D100 with bayonet mount 28-70mm f/2.8 ED-IF AF-S Zoom-Nikkor lens) mounted vertically on the photographic copystand (Bogen System 800 Repro Copy Stand W/bb 1740), with side illumination through 40 watts incandescent lamp. The background was chosen to be slightly lighter than the document colour in order to minimise shadows and optimise digital transfer. The Digital Camera had special colormetric filters that enabled the camera to capture a broader spectrum of colours than most digital scanners.

The lighting was also provided selectively by two 1000-watt Elinchrome strobe lights (daylight balance) at 45 per cent angle to copy surface, with multiple diffusion filters between copy surface and light to soften shadows and reduce glare for specific pages with illustrations.

2. Image Processing Station

The image processing station was a HP Brio PC with Pentium IV processor, 128 MB DDRAM. The workstation had the image processing softwares like Kodak Imaging, Adobe Photoshop 6. There was an image transfer device connected to the USB port, which gathered images from the memory card of the digital camera.

8 Project Process

The project process consisted of the following steps:

1. Document Assessment and Set-up

The condition of the document, sequence of pages, original page numbering order, was noted at this stage. The lighting environment was

adjusted as per the specific requirement of the document using a light meter. The book was set-up on the Photographic Copy Stand bed opening it at an angle of 120 degrees to avoid the stress to the binding of the manuscript.

2. Image Capture

At this stage the image was captured from the manuscript at the image capture station. Initially few shots were taken at different aperture, focal length and shutter speed. The captured images were transferred to the Image Processing Station for comparative study and standardisation of the image capture specifications.

The final images were captured using a cable shutter-release at

- Aperture : 16
- Focal Length : 55mm
- Shutterspeed : 2.5 seconds

The images were taken first for all right-hand-side pages and then for all left-hand-side pages (as this is a Persian manuscript). The images were captured in colour as uncompressed 8-bit-per-channel (24 bit RGB) TIFF files at 300 dpi.

9 Image Processing

The image processing consisted of the following steps:

- Image Identification Tagging: The images, once transferred from the Image Capture Station, were renamed as per the page sequence.
- Image Quality Check: The images were checked for any deviation in terms of clarity, legibility and colour.
- Basic Editing: The images were checked for any tilt/ skews and deviation from normal orientation, and were rectified to the acceptable level of 4-degree tilt of NARA specifications. The images, which contained some portion of the opposite page, were cropped, resized and the normal processing was done.
- Final Editing: The graphics level of each image was checked with the original. The images, which had come brighter, were toned down to match the actual. The unwanted stain and worm marks were removed. The colour channels were checked to conform to 8 bit per channel specifications.
- Format Conversion: The base files were converted to three basic formats as per the requirements, namely PDF, TIFF and JPEG.

- **E-book Format Conversion:** The individual image PDF files were tagged and a composite PDF file was prepared as per the original document pagination and sequence.

10 Project Output

The images were obtained in three forms, namely TIFF, PDF and JPEG. All the image files of the individual pages were obtained in uncompressed TIFF, and JPEG, with the objective of archival. The composite PDF containing the individual pages were in E-book form, with the objective of viewing and access. The images were stored in CD-ROM and were made resident in hard-disk of the central server.

11 Project Experience

The aspects of the project, which needs attention if the project is taken up on a larger scale, are as follows:

- The project would need a server administered hard disk based storage system with fault tolerance and disaster recovery provision along with CD-ROM to contain images of a document or an E-book in its entirety. For random access by viewers, hard-disk based storage is a more reliable option.
- It was observed for the images of document pages containing the illustrations, there were undesirable and unavoidable but minute tonal variations. This is because the illustration contains any shade of colour, which can lie in the spectrum of millions of colour. The CCD unit of the digital camera captures a limited band of the spectrum of colours. To circumvent this limitation, white light can be used.
- The digital restoration of the images of the manuscript was done using the state-of-art image editing software, Adobe Photoshop Version 6, which is in itself very resource-consuming on the processing workstation. The process of digital restoration is also very expertise-intensive which involves cloning, multiplayer processing, the hue, saturation and gradient adjustments, etc. It was observed that for complete satisfactory digital restoration of an A4 page of the said manuscript, at least 4-5 hours were needed for an expert professional to work with the above mentioned infrastructural set-up.

The demo project is done for the National Library, Kolkata in the field of Manuscript Restoration and Digitisation done on a specimen 298 – page book *Tutinamah* which was written in 1500 AD.

Target Book Description

Title	Tutinamah
Age	
Language	Persian
Binding	Leather Binding Right Side
Material	Paper
No. of Pages	198 Back to Back
Printing	Handwritten
Illustration	37 Nos. Colour illustration mostly using vegetable dyes
Texts	Black and red
Decorations	Golden metallic decoration on all pages
Pagination	Folio Format

Process**Image Capturing****Hardware Used**

Camera	Nikon Digital Still 5 Megapixel with 6 GB Removable Storage
Copier Stand	Adjustable Screw Type Manual
Lights	Normal Yellow Bulbs attached to the Copier Stand
Soft Box	HP Brio USB Port

Image Capturing Issues

Page Continuity	Pages have to be captured one side at a time (even or odd) and all pages of one side have to be captured in one single run. In this way two sets of images will be produced with Example: DSC0001, DSC0002 DSC0149
Lighting	Though yellow light is used in this Demo after the colour output is seen and analysed it is advisable to use white light with low temperature (for this soft boxes can be implemented).
Skewing	Well-bound old books generally produce a skew when opened in a copier stand. This can be taken care of manually.

Image Processing**Basic Level Processing**

Directional Correction Generally images are captured in landscape with outer areas/ adjacent pages in focused areas. The first step is to take it in a portrait format, balance and then remove the objects that are not required and pick up the central text area for further processing.

Background Production The background production has to be produced for restoration in case of extreme condition of the pages. In this situation the best part of the book has to be cloned to produce the background.

Image Setting and Balancing

The text image produced earlier has to be pasted with a centre line balancing because the text areas might not be equal in case of a manuscript.

Image Sizing

The image captured and supplied to the System by camera does not produce a 1:1 image size. So the text area taken out should be converted to a 1:1 size.

Advanced Level Processing**Stain Removal**

Most of the pages of old manuscripts are stain marked. Generally Adobe Photoshop 7.0 or higher version is used to get rid of these stains. Stain marks are selected individually and then balanced/ edited to produce the desired results. Due to the individual handling of each stain mark the process is time-consuming and rigorous in nature. Particularly stain marks spanning over colour images have to be handled very catutiously since at the time of stain removal it has to be ensured that the colour information is kept intact.

Basic Colour Editing/ Balancing

Graphics are selected and edited in photoshop 7.0 or higher version. This is an average colour balance in CMYK format to give optimum possible proximity to the original. Brightness, contrast, hue and gamma are also balanced at this stage.

Super Advanced Level Processing

Colour Balancing with Layer

Separation Method Since average colour balance does not provide the maximum possible proximity of all the colour shades of all the colours, a more elaborate method is used to give 99 per cent colour correction. In this the colour layers are separated and then balanced/edited to give a more close to original output. Each and every shade is corrected individually and then the layers are flattened to reproduce the whole graphic. A general illustration in this book contained more than 25 colour shades.

Transparency Mark Removal

Almost all the pages of this manuscript owing to ageing have become transparent and backside printing is visible on every page which was automatically captured by Camera in the Image Capturing Process. These numerous transparency marks are individually corrected to give the page a 100 per cent error free look.

Image Processing Issues

Time Factor Since all editing jobs are time-consuming as they have to be handled individually productivity at this stage is low, which means the cost of production is extremely high at times. Particularly in this case where layer separation is used or transparency marks are edited. For super advanced level processing produces no more than three pages in eight hours which can be even lower at the time of commercial production.

Sizing Error Problems Whenever layers are separated for editing there is a risk of sizing error which has to be handled extremely carefully.

Format Changes

TIFF Formats This is the default page format with richest information and huge file size. Each page takes nearly 22 MB space. A whole TIFF format production is kept as base storage.

JPEG Format	Takes less space (1.5 MB at 8th level quality when max quality is 10). Produced from the TIFF format. Conversions have to be done for individual pages.
PDF Formats	Created from TIFF format to produce the PDF book. Takes reasonable space (456 MB for a 298 page book). Conversions have to be done for individual pages.
Pagination and PDF Book Production	
Pagination	As the image was captured from the front (In Persian format) and the second set was captured from the back. The true page number for the first set will be $2n-1$ and for the second set will be $(150-n) \times 2$ when n = the set page number.
Book Production	The PDF book has to be produced using Adobe Acrobat writer with right side binding to give the Persian format look as well as continuity on single page view.
Final Delivery	
CD Burning	CD Burning is done to give the final delivery. 11 cds for TIFF images, 1 for JPEG images and 1 for the PDF book is produced.

The Centennial Review of the National Library of India

A. C. Tikekar*

1 Introduction

The concept of the National Library is age-old. Its unique position and apex status are recognised and accepted everywhere in the world. International and national professional bodies have repeatedly endeavoured to define its role and functions. Preservation of heritage and culture, nourishment of intellectual pursuits and scholarship of high order are on the agenda of a National Library. A National Library is considered a library of last resort, a leader library, a mother library guiding and inspiring all other libraries of the country. Realising that this library is of national importance not only developed but also developing countries establish it and ensure its proper growth. A long address list of National Libraries of the World on the IFLA NET bears this out.

2 The National Library of India

It is a proud moment in the career of the National Library of India (NLI) that it is completing a hundred years of its useful existence. In terms of a sprawling campus, imposing buildings, huge growing collections and government's efforts to make it a NL of the 21st century by initiating projects and programmes of modernisation and digitisation, it has obtained a special place in the country's library system. On the eve of the celebration of its centenary it would be worthwhile to review its progress.

The NLI is a product of the last century, and hence its set up and services reflect the ideas prevalent in the major portion of the 20th century. Its objectives, functions and features as stated in the important documents from time to time reflect the contemporary perspectives. They are as below:

2.1 The main objectives expressed in the Imperial Library Act, 1902 were: "It is intended that it should be a library of reference, a working place for students, and a repository of material for the future historians of India, in which as far as possible, every work written about India at any time can be seen and read."

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2.2 The Review Committee Report of 1968 suggested the following as the basic features of the NLI: "1. Acquisition and conservation of all significant printed materials produced in the country to the exclusion of ephemera. 2. Collection of printed material concerning the country wherever published, and also acquisition of photographic record of such materials that are not available within the country. 3. Acquisition and conservation of MSS having national importance. 4. Planned acquisition of foreign materials required by the country. 5. Rendering of bibliographical and documentation service of retrospective materials, both general and specialised. 6. Acting, as a referral centre purveying full and accurate knowledge of all sources of bibliographical activities. 7. Provision of photocopying and reprographic services, and 8. Acting as the centre for international book exchange and international loan."

2.3 The Committee on National Policy on Library and Information System in its Report (1986) recommended that the NLI should discharge the following functions: "1. To collect and preserve the production in print and in non-print form and all that is printed about the nation. 2. To render to the nation and to the world bibliographical and other services to meet the requirements of different user groups. 3. To interface between the national systems wherever feasible, and 4. To play a role of leadership in the country in the task of expanding and improving the library and information services." The Report also specified a few more tasks generated from the above functions.

In order to know the perspectives of those envisaging the broad and specific functions of the NLI proceedings being the first of its kind, the All India Conference of Librarians held at Lahore between January 4-8, 1918 can be cited. This conference was convened by the then Government of India involving parts of the country. The librarians of the Imperial Library, Royal Asiatic Society Libraries, Central Library, Baroda, and select University Libraries took part in it. Most of them were pioneers in the field in their own right. The Resolutions passed at the Conference touched on all important aspects of libraries: operational and functional. Some of them like cataloguing of scientific periodicals, subject indexing and cataloguing of books and MSS, catering to the needs of isolated research scholars, soldiers, preservation of paper, training of library personnel were quite ahead of the times. The idea of establishing and developing a National Library, however, did not figure in the proceedings vividly. It was in 1836 that the Calcutta Public Library was opened to the public and later on merged with the Imperial Library, the erstwhile National Library of India. In this historical perspective the origin of the NLI was a humble beginning of a

great cause. This situation perhaps has influenced the further career of the NLI. The big picture of a NL has not been conceived for most of the long span of the NLI's career.

3 The Big Picture of the NL

As stated earlier during the 20th century professional bodies did try to draw a big picture of a National Library, determine its major role in the national system of libraries and even enumerate its objectives and functions. The UNESCO in its two international seminars at Vienna (1954) and Manila (1964) and the IFLA in its Council Meeting in Rome (1964) had discussed the issues related to National Libraries and made sufficient headway in this direction. Humphrey's categorisation of functions of a NL as (i) the fundamental, (ii) desirable and (iii) not necessary, evoked a great deal of attention.

The major tasks assigned to a NL have been 1. Preservation of heritage and culture of the country through collection of print and other materials, both of domestic and foreign origin. 2. Collecting and organising for use the entire output of the print and non-print material of the country through its legal deposit arrangements. 3. Extending library and information services of high order to the whole country including all its important segments; government, industries, academic and research institutions, cultural organisations, individual scholars and any citizen seeking information of any type not available easily at his/her place. These major tasks extend logically to the list of organisational and operational sub tasks like 4) Establishing a bibliographical control on the collected material as well as that scattered throughout the country, i.e. compiling a National Bibliography and other allied and ad hoc bibliographies on a regular and scientific basis. 5) Enhancing the collections continuously through purchase, donation, exchange and gratis. 6) Determining service strategies worthy of a NL whose clientele is spread over the entire country and even outside. These include Inter Library Loan, photocopying and document delivery services. 7) In keeping with the role of an apex library in the library system of the country undertaking the initiatives and responsibilities of introducing new ideas of modernisation, automation in the NL as well as other libraries of the country and training library personnel accordingly. 8) As a premier Library fully supported by government adopting contemporary technologies and applying them suitably for effective services. 9) The clientele of NL belongs to all age groups, all levels of literacy and education, and special categories like the physically challenged. The NL, therefore, has to widen its scope of services so as to reach all of them procuring special reading

materials required, and following different modes of services. 10) As a national level institution caring for education and enlightenment, dissemination of information and knowledge, promotion of sense of cultural heritage and creativity through reading, it should work for sustaining interest in books and its new versions.

4 Review of the National Library of India

The review attempted here on the eve of the celebration of the centenary of the NLI is of the nature of introspection and not inspection. This review is being made in the light of the big picture of the NL globally acknowledged.

The NLI certainly has consolidated its position during the last hundred years as to its impressive spacious campus and a complex of heritage and new buildings, collections and their preservation, initiating and achieving the bibliographic control over the country's output, and serving as the link between Indian libraries and those outside.

Out of these the legal deposit arrangements on the basis of which the Indian National Bibliography is being compiled, needs a fresh look. The vast multilingual country like India has to tackle the issue of legal deposits under its peculiar situation. The Press & Registration Act (1867) and the Delivery of Books & Periodicals Act (1954 and 1956) are instrumental for the legal deposits in the NLI and its other three centres in the country. Several studies and surveys have shown that the yields are always on the lower side and they hamper the comprehensive and nearly full collection of the country's output image of the NL. The NLI has rightly undertaken recently the Legal Deposit Awareness Programmes throughout the country. The feedback they receive should be used for removing the hurdles in the way of a near hundred per cent response to these mandatory provisions. The necessary amendments to the Acts, if warranted, are welcome. It is worthwhile to launch a special drive to fill the gaps of missing books during the last several years. At the same time it is imperative to add the new versions of books especially electronic ones in the definition of the book, as has been done by many countries.

Building up a comprehensive and growing collection should be backed by strong and continuous conservation programmes. The NLI has taken adequate steps in this regard. Not only are the traditional preservation methods adopted but also a massive programme of digitisation is already launched. Considering the huge old and rare collections in the NLI the speed of the work should be accelerated. Digitisation leaves uncertainty with regard to the permanence of the digitised versions, and hence the possibility of microfilming some categories of the material such as

newspapers and periodicals be explored. In other words all the three medias—print, microfilm and electronic – be considered fit for preservation with necessary precautions.

The present services of the NLI, both in-house and outside need considerable upgradation. Though historically the NLI is established by merging a city public library and it is necessary to continue with its function now as metropolitan city public library, this should not offset the big image of the NLI envisaged in the various unique tasks assigned to it. Instead of divesting the NLI of the functions of a metropolitan public library, a separate unit for it be organised on the campus of the NLI or elsewhere in the city of Kolkata.

The functioning of the three Centres of the NLI in Mumbai, Chennai and Delhi needs to be reviewed in the light of their usefulness. At present they work more as repositories than libraries. The basic requirements of a functional library like processing and organising its stock for use are not fulfilled. These mounting collections are part of the libraries of State Governments in Mumbai and Chennai and an autonomous Government Library in Delhi. Though the collections belong to the NLI technically, their listing, their processing and availability to the public are not according to the NLI norms and practices. If these are NLI centres they should function like a NL. The NLI should insist on them following the standard norms regarding their organisation and services.

5 Transformation of the NLI into the 21st Century National Library

The NLI is completing its first century and entering into the next. The 21st century, however, has a special significance. It is known as that of Information Technology. It has offered ample opportunities for re-engineering and all that we were doing earlier for the benefit of our targeted clientele. The NLs of other countries have followed suit. The NLI should not lag behind. The ICONLIS hosted by it will provide a glimpse of ways and means to undertake the transformation work. The present grey areas like proper organisation of NLI Centres, and NLI Special Subject Sectors (Science, Medicine, Agriculture), and service to the entire country, could be met successfully with the help of appropriate technology. Combination of actual and virtual NLI can be considered. Many National and University Libraries around the world have developed collections that are useful for Indian studies and research. Linkages with them can be planned. Fortunately India has talents necessary for such feats. The need of the hour, however, is the strong will at the levels of all concerned and involved.

International Interlending and Document Supply: A Road Map for National Libraries

Sangeeta Kaul*

1 Introduction

In the current era of Information Technology, where we witness the terabytes transmission of bytes of information through the information superhighway, the need for information has increased manifold. It has become more challenging for the National Libraries of the countries to satisfy the information needs of their country since the economic growth and the progress of the country now depends largely on access to the latest updated information. Information has become an asset to the country who possesses it. The concept of Interlending and Document Supply are no longer limited within a particular city, inter state but has taken a global dimension of universal access to information through international lending and document supply. Moreover, it is no longer limited to the physical transfer of the material but we now rely on electronic access and delivery of the material. Since one of the major manifestos of the National Libraries of the world is to provide information services to the users through international lending and document supply, the National Libraries need to adopt a proactive approach in promoting the global cooperation in the global village. They need to meet the requirements of their users by acquiring the materials through cooperative efforts with the different National Libraries of the world.

This article focuses on the history, barriers, proposed solutions, guidelines and a framework for preparing a roadmap for smooth functioning of the Interlending and Document Supply services by the National Libraries. A questionnaire was also devised by the author and sent to nearly 30 National Libraries of the world to assess the Interlending/Document Supply status and the use of technology and information about other pertinent issues were also discussed.

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2 History

The history of Library Cooperation is age-old and can be traced back to 200 BC when the Alexandria Library shared its resources with the Pergamum Library. The Library Cooperation was also reported to exist among the Monastery libraries in the 13th century. The first major Union List entitled "A Catalogue of Scientific and Technical Periodicals" was compiled by Henry C. Bolton in 1885. In the 20th century, we witness the resource sharing being done by lending books between libraries which primarily meant the physical transfer of the material but it was found to be limited because of various factors including cost, the risk of the physical danger to the material and the inconvenience caused to the reader in the library from where the book got issued out in case the same materials were required by their own readers. The availability of the photocopy machines, made it possible for the libraries to send the photocopies of journal articles from the 1960s. But the requests for the international lending was limited. In 1950 it was felt that each country is responsible for maintaining a collection of its own national published documents and making it available to the rest of the world. It was achieved by adopting the Legal Deposit Legislation but in spite of the legislation, it was done in an uneven manner and at times the publishers were non-cooperative in submitting copies of their publications. It has been noticed that the National Libraries have been able to build up their collections. However, less attention has been given on the access to the information being available with the individual libraries. It was also urged that each country should have a central node responsible for international requests both for sending the requests from the country as well as to receive it from outside. This is being done to handle the requests more efficiently and to be assured that all the national resources are searched before sending the requests to outside libraries.

3 Changing Scope in an Information Age

There has been a tremendous transformation in the way we act and perform in our libraries, it is being taken over by the Digital Thinking. More and more of our services and information retrieval tools are digitally oriented. The electronic delivery of the journal articles are being done instead of physical supply of documents. The method of finding information is no longer being done just simply through physical browsing of catalogues, bibliographies, etc. but are being taken care of with the help of online library catalogues and the various search engines. The method for requesting information is also being done now through the electronic medium including through E-mails, online request forms, etc. and the delivery methods have

also changed which are not just limited to the physical delivery of the materials. But the most vital issue being encountered by the LIS community is the Copyright Regulation in the digital environment wherein the information is supplied electronically. The authenticity of the content and the authorisation of the users wanting information is also of concern to the information providers.

4 Barriers for International Lending and Document Supply

For smooth access and retrieval of resources of National Libraries to facilitate international lending and document supply among the National Libraries of the countries, the obstacles need to be tackled efficiently. A large number of barriers impede the flow of information across the geographical boundaries of the globe and severely affect the services. Some of these barriers are listed below, there are many more, but in the age of ICT where more and more content is born digitally and there should be initiatives to minimise the physical distances between the National Libraries. These barriers are encountered while locating the materials at different levels:

(a) Availability of material in machine readable form

Since the National Libraries are the depositories of the publications published in a country, a large number of items get deposited but the cataloguing of these publications are not done at the pace with which they are added to the collection. One major reason is the lack of adequate manpower in the libraries and also the availability of the publications in the regional scripts and the non-availability of the cataloguers who are familiar with the regional script cataloguing of the records.

Moreover most of the National Libraries have not computerised the records fully in the standard international bibliographic format, which still makes the collection accessible to the users who visit these libraries physically. It is a Herculean task for the National Libraries to fully digitise their collection and special attention must be given to it since in order to facilitate the UAP (Universal Availability of the Publications), the utmost requirement to make their presence a digital one.

(b) The machine readable catalogues of the National Library are not available Online on the Internet

Even though in many countries, the machine readable records are created by the National Libraries but they have not been ported on the

Internet which really makes it impossible to make the information accessible globally, but is restricted only to the local users. Non-availability of the trained manpower in the National Libraries at times are responsible for it. Since for running the online servers on 24/7 time basis, adequate infrastructure support is needed. The National Libraries of the world hosting their catalogues on the Web are included in the Appendix I.

(c) All the catalogues are not Z39.50 accessible

It has also been noticed that the catalogues which are available on the Internet are not Z 39.50 compatible. As a result, individual searches need to be done searching the catalogued records on the individual sites of the National Libraries.

(d) The catalogues of the National Libraries are not fully UNICODE compliant

Since each National Library of the world does acquire a large collection of the multilingual material and the records created in machine-readable should be UNICODE compliant so that the records can be accessed without any difficulty. There is a shortage of software packages supporting the creation of bibliographic records with UNICODE compliance. Some libraries are romanising with diacritical marks but that defeats the purpose of smooth retrievability.

Locating the Material: Some Suggestions

We need to consolidate our efforts in National Libraries to provide and create better tools for discovering the library materials through the online catalogues. The National Libraries of the world have to come together to create Virtual Union Catalogues of their National Libraries' resources and to provide the accessibility to the researchers and scholars of the other countries.

5 Barriers in Sending the Requests

In International Lending/Document-Delivery, it has been noticed that there is a lack of standard format for sending the requests, though IFLA has come out with the Guidelines for sending the requests through E-mail, fax, etc. But they are not being used universally. Moreover, the ISO ILL protocol is not implemented in most of the National Libraries and for sending the requests through post there is a slowness and unreliability in the delivery of the requests. At times, certain requests need to be on paper request forms.

6 Some Solutions

In order to streamline the procedure for registering the requests for the International Lending/Document Delivery, the ISO ILL Complaint system can be used for managing the computerised Interlending/Document Delivery systems. A listserv can be started to create a forum where the experts worldwide can guide those who want to implement the ISO ILL protocol. There should also be an openness in getting requests through E-mail and whenever the requests are needed on paper, a fax can be sent instead of sending the request through post.

7 Barriers in Document Delivery

In the actual delivery of the materials, a number of barriers are encountered.

Some of them are listed below:

1. The unreliability of the postal surface delivery. The postal surface delivery is not being considered as a safe mode for sending the expensive books/material to the libraries overseas. The borrowing libraries cannot afford the courier charges.
2. Sometimes the material reaches the wrong desk in an organisation.
3. The use of Electronic Document Delivery systems, e.g. Ariel system is not so popular among the National Libraries.
4. The Copyright regulation prohibits the electronic delivery of the material unless and until they are cleared by the copyright clearance centre.
5. There is a lack of proper scanning equipment and Internet access in the libraries.
6. Manpower shortage in the National Libraries.

8 Delivering the Materials: Some Solutions

It is suggested that the following points should be considered while supplying the books/journal articles on International Interlending or Document Delivery. There are several apprehensions which keep the library and information professionals from participating in the process more concentratedly. In order to overcome the issues, the following practices may be adopted:

1. The material to be sent should be insured. This is helpful in rare cases where the parcels containing the materials get lost in transit.

Since the materials especially the books are expensive they need to be insured before they are dispatched to the borrowing libraries.

2. There should be well-defined Wrapping Policies in order to ensure that the material does not get damaged. It has been seen that in the transactions, the edges of the book gets mutilated in the transactions. If the non-print material, e.g. the videocassettes are being sent on ILL, special packaging needs to be done.
3. The Ariel software should be used for the electronic delivery of the material and the material should be cleared by the Copyright Clearance Centre.
4. The Library and Information science professionals have to overcome their phobia of sending the material overseas. The professionals need to understand the seriousness and the implications concerning the delivery of the information.
5. It is possible now to scan the material and put it on the Web server and the Web address can be conveyed to the requesting library and the required information can be downloaded.

9 Barriers : Finances

The charging mechanism for international lending is one of the vital issues being faced by the library community worldwide. Due to the shrinking library budgets, alarming rise in the cost of the publications and more user demand for information, the National Libraries need to think in terms of recovering the cost from the borrowing library. For interlending an amount needs to be incurred on keeping the staff, record maintenance, equipment for photocopying, packaging material, stationery, etc.

A problem is also being reported in handling the payments. Though a number of National Libraries use the IFLA Voucher scheme but there are some international organisations who do not accept IFLA Vouchers.

10 How to Overcome the Barrier Concerning Finances

1. Reciprocal Agreements

There are many libraries who provide the International Interlending/ Document Supply through the reciprocal agreement where both the libraries do it mutually, In these cases, the imbalances occur on the basis of the

usage of the services since some library may not be able to utilise most of the services and is unable to recover their expenses spent on sending the materials to the other libraries. This model is not so promising considering the policies of the individual libraries.

2. IFLA Voucher Scheme

IFLA Voucher Scheme may be adopted by the National Libraries for settling International Interlending payments.

3. Interlending Fee Management System

The National Libraries of the world should implement the Interlending Fee Management system where each institution receives a monthly invoice, settling all debits and credits of the period. The IFM Library-to-Library borrowing debit will constitute the charges a library has incurred for borrowing items. The IFM Library-to-Library lending credit will constitute the credit owing to the supply of material by the library. The balance between the two will be the outstanding payment. Each library will get one consolidated payment bill instead of small bills with each transaction. The Sabinet Online in South Africa has implemented this system very effectively.

4. For the expedited delivery, an additional amount needs to be charged. Also the bank charges a substantial amount for the currency conversion which at times has been found to be more than the ILL fee.

11 Results of a Survey: Questionnaire to National Libraries

A questionnaire was designed in order to assess the status of resource sharing among the National Libraries of the world and also to know about their current developments. This questionnaire was sent through E-mail to the Heads of various National Libraries of the world requesting them to respond. The following are the results of the survey:

1. More than 80 per cent of the National Libraries surveyed have Web presence of their catalogues on the Internet for free worldwide accessibility.
2. Nearly 50 per cent of the libraries have their catalogues UNICODE Complaint.
3. Less than 15 per cent of the National Libraries are using the ARIEL software or any other electronic document delivery software.
4. The ISO ILL protocol is not being implemented by the National Libraries.

5. Nearly 80 per cent of the National Libraries allow Reciprocal Free Borrowing.
6. Forty per cent of the National Libraries have Wrapping Guidelines.
7. Language is not considered as a barrier.
8. The non-print material is not meant for lending. However, the printouts from the microfilm/microfiche are available on demand by some.
9. The rate of International Lending Loss has been found to be the same as that of the Local Lending Loss.
10. The overseas materials are always being sent through registered post.

12 Role of Library Networks

The Library Networks in each country need to supply the information to the National Libraries. They should also help the National Libraries to adopt the bibliographic standards, creation of databases, training of manpower, etc. The ILL/Document Delivery services can also be undertaken by the Library Networks on behalf of the National Library.

13 International Lending and Document Supply: IFLA's Principles and Guidelines for Procedure

1. National responsibility

Each country should accept responsibility for supplying copies of its own publications to any other country, by loan, photocopy or other appropriate method. This applies certainly to those published from the present date, and as far as possible retrospectively.

- 1.1. Each country has a special responsibility to supply its own national imprints to libraries in other countries. The concept of universal availability of published material (UAP) relies on this principle, and this responsibility should be accepted readily by all countries.
- 1.2. No country or library is under an obligation to supply a work that has been requested, but all reasonable efforts should be made to satisfy international requests.
- 1.3. A concerted effort should be made to satisfy requests received from libraries in less developed countries, in support of the concept of UAP.

- 1.4. All communication should be in clear and simple language in order to avoid misunderstanding across linguistic barriers.

2. National lending system

Each country should aim to develop an efficient national lending system, since national lending systems are the essential infrastructure of international lending.

- 2.1. Recommendations on developing efficient national lending systems are outside the scope of these guidelines, but users are referred to the *Model National Interlibrary Loan Code*, also produced by IFLA, which sets out the basic requirements of a national system.

3. National policy for international lending

Each country should have a national policy for the international lending and document delivery of its own publications. The policy should be disseminated through the National Library, National Library association, or other major interlending institution.

- 3.1. Where a country has a national centre for interlibrary loan and document delivery, this centre should be the main focus for the development of a national policy. Where there is no national centre, responsibility should rest clearly with the National Library, a national interlending coordinating body, or major lending institutions.
- 3.2. All libraries in the country involved in international lending or document delivery should be aware of, and work within, the national policy.
- 3.3. The national policy for international lending should be made available to all libraries outside the country, via the National Library or other lending institutions, or by other individual libraries that receive international interlending requests. Similarly, all major libraries should make available to requesting libraries their own policy on handling international requests.
- 3.4. The national policy should indicate whether outgoing requests should be sent via the national centre where one exists, and whether individual libraries may send requests direct to supplying libraries outside the country.

- 3.5. Similarly, the national policy should make clear whether incoming requests should go via the national centre (where one exists), and to what extent individual libraries should accept and satisfy international requests. The IFLA publications *Guide to Centres of International Lending* and *Guide to Centres of International Document Delivery* list institutions to be contacted in the first instance if in doubt.
- 3.6. All libraries within the country should aim to handle requests from other countries in a consistent manner, in order to offer a clear and effective service for international requests.

4. Sending the request

Supplying libraries should accept requests submitted in any format wherever possible. Requesting libraries should be aware that not all formats will be accepted by all supplying libraries. Accuracy should be ensured at all points in the request process.

- 4.1. The requesting library should endeavour to use electronic ILL request facilities whenever these are provided.
- 4.2. Requests submitted by E-mail, fax, or other fast methods should conform to agreed standards, such as the *IFLA Guidelines for E-mail Requests*, the *IFLA Fax Guidelines*, or the ISO ILL Protocol, if appropriate.
- 4.3. Requests using paper forms should be on *IFLA Request Forms*, or on other forms authorised by IFLA.
- 4.4. Where the loan of an original or a specific type of copy is essential, this should be stated on the request.
- 4.5. Where the loan of an original is required, reasonable efforts should be made to ensure that no copy is available in the requesting library's own country before a request is sent abroad.
- 4.6. Incomplete or inaccurate requests cause delays and may have to be returned for further checking. It is the responsibility of the requesting library to verify, and where necessary complete the bibliographic details of the item requested to the best of its ability.

5. Supplying the item

The decision whether to supply a substitute copy or to loan the original rests with the supplying library. Each country should be sympathetic to the requesting library's ability to access the supplied format.

- 5.1. The supplying library should send the item or provide a response as quickly as possible and by the fastest available method.
- 5.2. Items should be sent direct to the requesting library, except where it is specifically stated that they must be sent to a national centre.
- 5.3. All items lent should be clearly marked with the name of the owning library.
- 5.4. The supplying library should be as generous as possible in setting the due date for the return of loaned items, taking into account the time required for postal delivery and return of the item.
- 5.5. Where an item cannot be supplied, the reason for non-supply should be given as clearly and as fully as possible. *The IFLA Multilingual List of ILL Response Codes* should be used for this purpose.

6. Copyright

Due regard must be given to the copyright laws of the supplying country. While material requested on international ILL may often fall within 'fair use' or 'fair dealing' provision, responsibility rests with the supplying library to inform the requesting library of any copyright restrictions which might apply.

- 6.1. These guidelines relating to copyright and international lending support the *IFLA Position Statement on Copyright in the Digital Environment*. Libraries should be aware of this position statement.
- 6.2. Each supplying library should be aware of, and work within, the copyright laws of its own country. In addition, the supplying library should ensure that any relevant copyright information is made available and communicated to requesting libraries.
- 6.3. Lending, and limited copying for purposes such as research or private study, are usually exceptions within national copyright legislation.
- 6.4. The requesting library should take into consideration the copyright laws of the supplying library's country.

- 6.5. Each supplying library must abide by any licenses agreed to by their organisation, which may have some restrictions on the use of electronic resources for ILL transactions.
- 6.6. Libraries should be aware of the *IFLA Licensing Principles* when considering ILL from licensed sources.
- 6.7. The supplying library is not obliged to participate in services which enable copyright fee-paid copies to be supplied.

7. Responsibility for loaned material

The requesting library assumes responsibility for borrowed materials from the time the material leaves the supplying library until it is safely received back. Fast secure methods should be used for supplying and returning items.

- 7.1. Loans should be packaged and labelled by both the supplying and requesting libraries to ensure that they conform to customs requirements. It is the responsibility of both the requesting and supplying libraries to ensure they are aware of current customs regulations with respect to the international loan of items.
- 7.2. Original documents, when received by the requesting library, must be used in accordance with its normal regulations unless the supplying library stipulates certain conditions.
- 7.3. It is the responsibility of the requesting library to ensure that the item is securely packaged, clearly labelled and adequately insured for its return.
- 7.4. Items should be returned by the fastest service reasonably available to the requester. Airmail should be used whenever possible.
- 7.5. From the moment a library despatches an item to a requesting library until it returns, the requesting library is responsible for any loss or damage incurred. The requesting library is responsible for replacing the item, or for paying the supplying library the full estimated cost of any such loss or damage, including where requested, any administrative costs involved.
- 7.6. The requesting library should request renewal of the loan period well before the due date. Where no response is received, the renewal may be assumed to have been granted. If renewal is known to be unavailable on an item loaned abroad, this should

be communicated to the requesting library at the time of delivery of the item.

8. Charges and payments

The decision whether to charge a fee for transactions rests with the individual library. Where such a charge is made, the library should endeavour to keep the mechanism for charging and payment as simple as possible.

- 8.1. Transaction charges may be made or waived according to agreements between the two libraries involved.
- 8.2. Requesting libraries should indicate their willingness (or otherwise) to pay a fee (and the maximum amount they are willing to pay) at the time of making the request. If the charges are greater than the maximum cost, the supplying library is not required to fill the request.
- 8.3. Both supplying and requesting libraries must be aware of possible requirements under national copyright law which relate to making a charge for copies supplied.
- 8.4. Suggested simplified payment methods include:
 - Prepaid systems such as the *IFLA Voucher Scheme* where libraries buy numbers of vouchers in advance and send an agreed number of vouchers with each request.
 - Deposit accounts whereby the supplying library holds a sum deposited by a requesting library and deducts an amount from it according to each item supplied.
 - Flat rate payments where an average or unit cost per item is determined. This method may be combined with prepayment or deposit accounts.

14 Conclusion: International Interlending and Document Supply: A Road Map

It may be concluded that there is a need for creating a road map for the National Libraries to promote international interlending and document supply. Some of the recommendations are mentioned below:

1. Development of a virtual Union Catalogue of National Library Resources linking the Websites hosting the catalogued records.

2. The development of National Copyright Clearance Centre in the National Libraries.
3. The National Libraries should play a key role in making the National Policy for International Lending/Document Supply.
4. National Libraries should provide NLCN (National Libraries Catalogue Number) to each published document of the country and it should be mandatory for the publishers to get it and record it in their published work, after submitting a machine readable record of their catalogued item in standard format. This will eventually lead to the development of a National Library resource.
5. The National Libraries should help the libraries of their country in the creation of standard machine readable records by allowing them to download the records from their site. A special tie up can also be made with the National Libraries of the other countries.
6. National Libraries should promote reciprocal free borrowing.
7. The National Libraries should collaborate with the National Resource Sharing Library Networks to provide the Document Delivery services.

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Report of the Proceedings

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1 The Initiation

The International Conference on National Library Services (ICONLIS 2004), organised by the National Library, Kolkata, as a part of its centenary celebration, took off at Hotel Taj Bengal, Kolkata, on March 15 with the lighting of the ceremonial lamp by Mr. Dhanendra Kumar, Secretary, Department of Culture, Government of India, in the presence of an august gathering of delegates from 26 countries, senior professionals and invited guests.

Mr. K. Jaykumar, Joint Secretary, Department of Culture, GOI, while welcoming the delegates, emphasised the need for redefining and reorienting the objectives and functioning of the National Library in view of the changing environment and the needs of the present generation. He said that the rationale behind organising the conference was to know what was happening in the National Libraries in other parts of the world. Mr. O. P. Kejriwal, Chairman, Board of Management, National Library, Kolkata, in his address said that the technology had helped in fulfilling our dreams and fancies and our wishes were now chasing the technology. He observed that it was imperative for the National Library to change itself swiftly in tune with the changing needs of the users.

Dr. H. K. Kaul, Director, DELNET and Coordinator, ICONLIS, stated that no National Library could procure everything. So cooperation with other libraries through IT, was important for the National Library. He said that free access to information had to be ensured and that conservation of electronic resources should be on the agenda of the National Library. He affirmed that the conference would proceed on two tracks. In track-A contributed papers would be discussed, while in track-B international consultative committees on different areas would discuss the respective

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issues. He noted that that these committees would continue to work even after the conference.

In his inaugural address, Mr. Dhanendra Kumar emphasised the need for formulating a concrete action plan for the National Library, Kolkata. He said that knowledge was the main resource in the present world and libraries have a great role in their conservation and dissemination. Libraries, according to him, were living entities and hence these had undergone osmosis. He also described the various initiatives taken by the Department of Culture, GOI, for preservation of manuscripts and digitisation of archives and libraries. This was followed by the keynote address delivered by Ms. Joan de Beer, Acting National Librarian, National Library of South Africa.

Prof. Sujit Kumar Basu, Vice-Chancellor, Visva Bharati University, in his presidential address, discussed the aims and objectives of the National Library. He felt that people today were more interested to access their required information quickly than reading books. They want information no matter where this was available. He stressed on networking of libraries in this context. He maintained that the LIS schools in the country were not attracting the best talents. This, he said, might one day affect the health of the libraries. He lamented that often modernisations were not properly appreciated.

Dr. Ramanuj Bhattacharya, OSD, National Library, Kolkata, while proposing a vote of thanks, spelt out the rationale behind organising the present conference.

1.1 The Focus

The keynote address delivered by Ms. Joan de Beer, Acting National Librarian, National Library of South Africa, was a great attraction at the inaugural function. The main focus of the address was on the literature published on National Libraries during the last 45 years. Ms. de Beer pointed out that the literature published on National Libraries throughout the world was quite sizeable, the number being around 2000 since 1967. These covered five different aspects of the National Library, viz. nature, function and role of the National Library; governance, funding and performance; library building; collection and bibliographical control; and use of information and communication technology. She said that the focus of National Libraries should be on education, bibliographical control and conservation of local culture and heritage. She also emphasised the need for strategic planning efficiency indicators for every National Library. She observed, it was strange that people were talking about virtual library, borderless library and paperless

society on the one hand, and new and spacious buildings are being constructed for the National Libraries on the other. She also gave a brief account of the National Library of South Africa and expressed the hope that the National Library of India would play a leading role in digital library development.

2 The Progression

The deliberations of the conference continued in six technical sessions, where authors from different countries presented their papers, the total number of such papers being 47. Nine papers could not be presented, as the authors of those papers were unable to attend the conference.

2.1 NL Systems and Services

In the first session, chaired by Prof. Prabir Roychoudhury, former Head, Dept. of Library & Information Science, Jadavpur University, Kolkata, 12 papers were presented on the theme 'National Library Systems and Services', of which nine papers described the National Library scene in different countries, viz. Japan, Australia, Russia, Greece, Bangladesh, Indonesia, Bhutan, Greenland and Maldives. The other three papers presented the Indian scenario.

2.1.1 In Japan

Presenting his paper entitled 'Services of the National Diet Library of Japan: Present State and Future Direction', Mr. Mashashi Murakami, Department Director, Collection Department of the Kansai-kan, The National Diet Library, Japan, pointed out that the National Diet Library, established in 1948, was basically the library attached to the Parliament of Japan. In 2002 the library opened two units, viz. Kansai-kan (in Kyoto) and the International Library of Children's Literature (Ueno, Tokyo). He said the basic policies of user services of the library were: to improve user-friendliness and assured equal access; to meet the users' information needs promptly and effectively; to simplify the procedures and enhance public relations activities; to maintain the consistency of service provided in three facilities. Mr. Murakami then proceeded to explain how those policies were put into practice and how the services of the library were improved. He mentioned in future the main priorities of the library would be: enhancement of legislative support activities, construction of a digital archive, improvement of access to information resources and promotion of cooperative projects.

2.1.2 In Australia

In the next paper entitled 'A New Strategic Direction for the National Library of Australia', the author Ms. Elizabeth Dracoulis, pointed out that the National Library of Australia was at present halfway through implementing its strategic *Directions for 2003-2005*. This public statement of the library's aims, she noted, clearly focused on developing new services and redeveloping existing services to create an environment where users could easily find the information resources that satisfied their research queries and having found it to get that resource. She then went on to describe what had so far been done in the matters of improvement of the library's Website, development of digital collections and collaboration for national resource sharing and delivery of information resources to the users. She mentioned an evaluative study undertaken to assess the impact of the changes in the library's onsite reference and collection delivery service on the users and said that the result indicated that the new developments had been warmly welcomed by the users as these had enabled them to feel more independent and in control of their research activities.

2.1.3 In Greece

Presenting the paper 'National Libraries: A Perspective for a Leading Role in the E-Services Epoque,' written by Antonia Arahova and Sarantos Kapidakis, Ms. Arahova, who is the Librarian, National Library of Greece, stated that the library had embarked upon modernisation and radical improvement of the crucial services under the leadership of its new director. She said that a strategic planning was underway in which great importance was being given to the contribution of electronic services. She underlined the leading role that National Libraries are expected to play in the field of E-service, specially E-learning and E-reference. She also highlighted the role of the National Libraries in social interaction.

2.1.4 In Bangladesh

Mr. Sharifuddin Ahmed, Director, National Archives and National Library of Bangladesh, in his paper, 'Bangladesh National Library Services', gave an idea of the set-up, functions, collections, physical facilities and services of the National Library of his country. He also outlined the library's future plan, which included setting up of an advisory council, developing the library as a modern international centre of learning, implementation of a new library law, making it a separate national body with all necessary manpower, etc.

2.1.5 In Indonesia

In his 'Indonesia Country Report', Mr. Sungkowa Rahardjo, Deputy for Collection Development and Library Services, National Library of Indonesia, traced the development of the National Library system in his country, which consists of Regional Libraries (including mobile libraries), Public Libraries, Special Libraries, School Libraries, University Libraries and the National Library of Indonesia. He said that according to the Main Policy of Library Development in Indonesia, decreed by the Ministry of Education and Culture in the 1980s, envisaged establishment of a national system to cope with the needs of information for education, research and culture as well as to promote the reading habit among the people. According to this policy, the National Library had the main task of developing all types of libraries in the country. He detailed the structure, functions and services of the National Library and its role in development of new libraries, specially in implementing the Library Development Project, 2001-2003, with World Bank funding. He also gave an idea of the intellectual property right laws prevalent in his country.

2.1.6 In Bhutan

Mr. C. T. Dorji, Joint Director, National Museum of Bhutan, in his paper 'The Role of the National Library in Bhutanese Society', gave an idea of the Buddhist literature, which mainly formed the collections of Buddhist monasteries and how the modern concept of library developed in that country. He then discussed the development of the National Library of Bhutan, which was set up in 1967. He mentioned the aims and objectives of the library and gave details of the main collections and the progress of computerisation. He observed that the library was becoming popular since the introduction of reader services in recent years.

2.1.7 In Greenland

The National Library scenario of Greenland was presented by Ms. Erika Nielsen Baadh, Head of Groenlandica (National Library – Subdivision of National and Public Library of Greenland), while presenting her paper 'Groenlandica: Past, Present and Future'. She gave an idea of the collection of the library and outlined the library's objectives and functions. She specially mentioned the digital library project VESTNORD, undertaken by Groenlandica.

2.1.8 In Maldives

Ms. Habeeba Hussein Habeeb, Executive Assistant Director, National Library of Maldives, presenting her paper entitled, 'The National Library

of Maldives', briefly described the aims, objectives and services of the library. She also gave an idea of the collection and staff of the library.

2.1.9 In India

The next three papers related to National Library services in India. Ms. Kalpana Dasgupta, former Librarian, National Library, Kolkata, and former Director, Central Secretariat Library, Delhi, presenting her paper 'Planning a National Library System for India', presented a proposal for a National Library system for the country with the National Library as a hub. She proposed networking of depository libraries, networking of libraries under the Department of Culture, GOI, and networking of state central libraries.

Prof. A.C. Tikekar, former Head, Department of Library & Information Science and University Librarian, University of Bombay, Mumbai, presenting his paper 'National Library Services', pointed out that the National Library should be responsible for preservation of the cultural heritage and bibliographical control. He said the National Library should have links with sister institutions like archives and museums. He proposed setting up of a Centre for Books for promoting the reading habit.

Presenting the last paper 'The National Library of India: Need for a New Strategy', Mr. P. Jayarajan, former Head, Library & Information Services (India), The British Council, New Delhi, said that the weakest link of the National Library was its service. He said that it was the right time that the National Library reoriented its focus. The National Library, he said had already started many major modernisation programmes. It should now consolidate all these, articulate a new strategy and a set of objectives and then draw a road map to achieve the stated objectives. He also discussed what should be the components of the new strategy.

2.2 Legislation, Collection Development and Bibliographic Control

In the second technical session, chaired by Prof. P. B. Mangla, former Head, Department of Library & Information Science, Delhi University, Delhi, eight papers were presented pertaining to the areas mentioned, while three on some related areas. Three other papers could not be presented due to the absence of the respective authors. Out of the eight papers on the session theme, three papers were on the legal aspect of National Library services and legal deposit, one on collection development and the rest on bibliographical control.

2.2.1 Legal Aspect

The paper on 'Legislation for National Library Services', was presented by Dashrath Thapa, Chief Librarian, National Library of Nepal. He said that there were National Libraries in many countries of the world, but several among them were unable to perform national functions as they lacked the necessary legislation detailing mandatory functions. He highlighted the major responsibilities of a National Library and the obligations of a nation to ensure legal deposits of all publications emanating from that nation. He described the efforts being made in Nepal for the enactment of a law for legal deposits.

Mr. K. Jayakumar, Joint Secretary, Department of Culture, GOI, presenting his views on 'Delivery of Books Act in India', said that the present law was being largely violated. He observed that during the last fifty years the number of books published had been going up but the percentage of books deposited was going down. He pointed out that the National Library could not be the National Library in the real sense unless deposit of the entire intellectual output of the country was ensured. Analysing the reasons of the present state, he said that publishers had to deposit around 9 to 10 copies of a book under the provisions of different laws but they did not see any benefit, direct or indirect, from making such deposits and that the amount of fine prescribed for non-deposit was too low to serve as a deterrent and the collection of the fine was more costly than the fine itself. Moreover, the cost of sending the books was also high. He said that the effort was being made to amend the law to make it more pragmatic and realistic. The possibility of exempting the postal charges for making the deposits was also being explored. He said at the same time the National Library should also accelerate its operations so that publishers are inspired to make the deposits.

Mr. R. K. Chaddha, Director, Parliament Library, New Delhi, while presenting his paper on 'The Legal Deposit in Changing Information Infrastructure', pointed out that there were some obligations for the depository libraries such as creating a record describing each publication and make it available through the national bibliography and the library's database, arranging for its proper preservation and so on. He inquired whether these obligations are being properly met. He said more and more countries were amending their legal deposit laws to include electronic materials. In our country an increasing number of non-print materials, including electronic materials, are being brought out. So there was an urgent

need to amend our law to include such materials. In this context he also outlined the role the National Library should play in processing such materials and their inclusion in the Indian National Bibliography. He also raised the issue of format in which electronic materials should be deposited as lives of the existing formats were limited at present.

2.2.2 Collection Development

The lone paper in this area entitled 'Acquisition Policies in National Libraries', was presented by Ms. Carol L. Mitchell, Deputy Field Director (South Asia), Library of Congress. She briefly mentioned the copyright and legal deposit laws of USA and gave an account of the activities of the Copyright Acquisition Division of the Library of Congress, which enforces these laws. She described the other acquisition activities of the division such as exchange programmes and procurement of foreign publications through overseas offices. She also mentioned the challenges being faced by the division in procuring the digital materials.

2.2.3 Bibliographical Control

The first paper in this area 'A Union Catalogue for South Asia' was presented by James Nye, Bibliographer for Southern Asia and Director, South Asia Language and Area Centre, University of Chicago. He gave a detailed account of the work being done under a self-sustaining programme to create a South Asia Union Catalogue of Books and Periodicals, including Newspapers, undertaken by the Council of South Asia Library Centres in conjunction with the Sundarayya Vijnana Kendram of South India and the University of Chicago.

Dr. H. K. Kaul, Director DELNET, New Delhi, presenting his paper on 'National Bibliographic Control: Some Issues' stressed national bibliographic control in a country in an open environment. He tried to find out why all printed publications did not reach the National Library and what are the problems relating to electronic publications. Other major issues raised by him related to the bibliographic standards to be adopted to make national bibliographic control effective, creation of bibliographic records – both current and retrospective, national bibliographic agency, digital versions of government publications, and legal deposits, including deposit of electronic documents. He also gave an account of the work being done by DELNET for creation of a national database.

Dr. K. S. Raghavan, Professor & Head, Department of Library & Information Science, University of Madras, Chennai, in his paper 'Universal

Bibliographic Control: Implications for India', explained the concept of UBC and went on to examine in this context the principal technical issues involved in creating an effective mechanism of bibliographical control of materials published in India, including electronic materials. He pointed out the yawning gap in the Indian National Bibliography and stressed on a more comprehensive approach to bibliographic control at the national level.

In the last paper in this area, 'Bibliographic Resources in Indian Languages', Mr. K. K. Kochukoshy, Librarian, Central Reference Library, Kolkata, gave a picture of the attempts made towards bibliographic control of publications in Indian languages. He observed that the majority of documents published in Indian languages were now going without proper control. He emphasised that there should be a commitment on the part of the publishers to deposit the books being published by them and said that the state central libraries should be given the responsibility to collect language publications and to send the records to the National Library for inclusion in INB.

2.2.4 Other Issues

Mr. Graham Shaw, Head, Asia Pacific and Africa Collections, The British Library, London, in his paper, 'Modernising National Libraries: Some Aspects of Recent British Library Experiments', briefly dwelt on the British Library resources for Indic studies and the current profile of that library. He then brought out the key aspects of the modernisation of the British Library. He discussed the current strategy and initiatives taken in this direction and gave an idea of the future collaborations envisaged.

Dr. Prachark Wattes Nanusit, former Deputy Director of the National Library of Thailand, in his paper, 'Royal Legacy: Collections of the National Library of Thailand', traced the development of that library. He also described the structure of the library, the nature of its collections and the types of services rendered.

This was followed by presentation of an interesting paper entitled 'Prototyping of Language Library Services in Singapore', by Ms. Pushpalata Naidu of the National Library Board of Singapore. She stated that on the recommendations of the Language Advisory Panels of the National Library Board of Singapore, three prototype libraries have been created for three main communities of the country, viz. Indian, Malay and Chinese, by converting three existing libraries. These, she said, were one-stop libraries for the respective communities. The prototyping experiment had given a boost to the use of the libraries, she added.

2.3 Information Technologies

The third session on 'Information Technologies', chaired by Dr. H. K. Kaul, Director, DELNET, witnessed presentation of seven papers. Three papers could not be presented owing to the absence of the respective authors. Out of seven papers, one paper discussed all aspects of IT application in libraries; one described the efforts made by some National Libraries in harnessing IT for facilitating equity of access to the respective National Library holdings. The rest were devoted to current and future national activities in this regard.

2.3.1 Comprehensive View

Mr. Jagdish Arora, Librarian, Indian Institute of Technology, Delhi, presenting his paper entitled 'Application of New Information Technology in Libraries and Information Centres', discussed all important issues relating to application of IT-related technologies in libraries and information centres and IT-based services. He pointed out that new opportunities have come in the way of the library and information professionals. To make best use of these opportunities for the betterment of the services provided by them they should reorient themselves and think creatively.

Presenting the paper, 'Fossilising for the Future: Scoping the Role of National Libraries in the Digital Domain, Dr. Shalini Urs, Professor, Department of Library & Information Science, Mysore University, Mysore, pointed out that the traditional role of National Libraries in archiving and preserving a nation's intellectual heritage had been further accentuated in the digital domain in view of the transient and volatile nature of the digital objects. She then went on to briefly describe the programmes taken up by some selected National Libraries for creating and archiving the digital collections. She remarked that it was high time for the National Library of India to assert its role in documenting the digital heritage of the country and develop a policy document and action plan for collecting and archiving digital materials produced in India.

2.3.2 National Activities

The presentations in this area mainly related to three countries, viz. China, Singapore and India. Mr. Zhang Xiaoxing, Deputy Director, National Library of China, while presenting his paper, 'The Contribution of Information Technology to the Services of the National Library of China', showed how the National Library of China had made great explorations and practical applications of information technology during the last decade.

He specially mentioned the essential research and experimental projects on digital libraries undertaken by the library.

Mr. Ngian Lek Choh, Assistant Chief Executive, Operations, National Library Board, Singapore, in his paper 'SILAS – Singapore Integrated Library Automation Services', projected a fine picture of how an automated library network called SILAS was successfully operating in his country.

Mr. E. Rama Reddy, University Librarian, University of Hyderabad, Hyderabad, presenting his paper on 'Use of Advanced Information Technology: National Library of India', tried to show how advanced IT could be utilised by the National Library for providing such services as browser services, search services and messaging services.

Ch. Ahrarul Hasan Jawaid, Assistant Librarian, Maulana Azad Library, Aligarh Muslim University, Aligarh, discussed different aspects of digital archiving and the need for such archiving in the National Library, while presenting his paper on 'Digital Resources and its Archiving in the National Library'.

Presenting the last paper of this session entitled 'National Library of India in the Digital Context: Strategic Directions', Dr. Jagtar Singh, Head, Department of Library & Information Science, Punjabi University, Patiala, focused on the changing role that the National Library should play in the digital environment. He pleaded that the National Library of India should make concerted efforts to globalise India's documentary heritage. He also proposed development of a trans-national multimedia library.

2.4 Standards and International Cooperation

The fourth session, chaired by Mr. Graham Shaw, Head, Asia Pacific and Africa Collections, The British Library, London, dwelt on standards and international cooperation. There were four papers in this session, of which only two papers were presented by the respective authors.

2.4.1 The Authors' Views

In the first paper, 'Bibliographic Control in the 21st Century: Need for Common International Standards', the author Sunita Murthy, Head of Cataloguing, US Library of Congress Office, New Delhi, discussed the need and benefits of standard bibliographic description. She stressed that standards were essential for resource sharing and described MARC 21 as the standard format for the 21st century.

At this point the chairman informed that the British Library had taken a decision to adopt MARC 21. He also agreed with the author's contention that the cataloguing must not be neglected in the process of digitisation and that a common standard was essential for resource sharing.

Dr. A. R. D. Prasad, Associate Professor, DRTC, Bangalore, presenting his paper on 'Standards and Guidelines for Digitisation and Digital Repositories in National Libraries', stressed on digitisation of ancient and medieval literature, specially manuscripts and suggested some guidelines for their scanning. He mentioned different standards relating to metadata and experiments about multilingual MARC. He hoped that Dublin Core would be more library-oriented in future.

2.4.2 The Discussions

As sufficient time was available, the chairman invited discussions on the issues raised by the authors. Mr. Ngian Lek Choh of Singapore wanted to know which standard should be adopted in a digital library. Dr. Prasad said that in spite of shortcomings, Dublin Core was the best standard at the moment. Mr. Sharifuddin Ahmed of Bangladesh wanted to know how one should proceed in the matter of digitisation in the face of the deteriorating condition of old library materials on the one hand, and lack of sufficient resources on the other. Dr. Prasad pointed out that the digital library created by his team had no funding. But for taking up any large-scale digitisation work, extra funding and extra staff were needed.

The chairman noted that preparation of OPAC was the first step, before taking up the work of creating textual databases.

2.4.3 The Presentation

The chairman wanted to know the progress of digitisation of the National Library, Kolkata, from any representative of the library. Ms. Uma Majumder, Assistant Librarian-in-charge of the Computer Section of the National Library gave a power-point presentation of the digitisation work under process in the library. She said that the process had started in November 1999 and MARC 21 standard was adopted from October 2003. An expert committee was selecting the books to be digitised. The actual digitisation work, she said, was being carried out by private parties, but the indexing work was being done by the library and database was available to the readers.

The chairman in his comments observed that the proper planning and assessment should always be done before taking up the digitisation work. He said that along with digitisation, the National Libraries should continue

to take steps to preserve the original documents. In this context microfilming as a method of preservation should not be neglected, he added.

2.5 Preservation and Conservation

In the fifth session, chaired by Mr. O. P. Kejariwal, Chairman, Board of Management, National Library, Kolkata, four papers were presented, of which three were on different aspects of preservation in the National Libraries and one on the legal deposit of musical items. Besides, there was a report on the progress of retro-conversion work in the National Library, Kolkata.

2.5.1 Role of National Libraries

Presenting the first paper of the session on 'Preservation and Conservation of Library Resources, with Special Reference to the National Library of Malaysia', Mohd. Din Bin Ahmed, Deputy Director, Conservation Division, National Library of Malaysia, gave an account of the preservation and conservation activities in the National Library of his country. He said that the aim of his library was to preserve both the original documents – both print and non-print, and their bibliographical records. He also mentioned the innovations initiated by the library and the extension services undertaken by the library for the benefit of other libraries of the country.

Mr. R. K. Perti, former Director General, National Archives of India, in his paper discussed the causes of deterioration, disintegration and damage of papers and different methods of conservation of paper highlighting the methods developed in the National Archives. He felt that the National Library of India should take the responsibility of making the users aware as to how the documents should be properly handled.

In the next paper entitled 'Preserving the Cultural Heritage of India through Digital Mode by Decentralised National Library System', the author Mr. V. K. J. Jeevan, Assistant Librarian, Indian Institute of Technology, Kharagpur, proposed decentralisation of the National Library system and a digital action plan for the National Library, Kolkata. He felt that the National Library should concentrate more on preservation of rare documents and that it should compile a directory of relevant Web links.

2.5.2 Deposit of Musical Items

Prof. M. B. Konnur, University Librarian and Head, Department of Library & Information Science, University of Pune, presenting the paper

'Music Libraries in the Perspective of Legal Deposit' by Aparna Kafendra, Assistant Librarian, University of Pune, stressed the need of bringing musical records and other items within the purview of legal deposit as had already been done in many countries. India, according to the author, had a rich heritage of music and it was necessary to set up a national musical archive urgently.

2.5.3 Retro-conversion

Dr. Ramanuj Bhattacharya, Officer-on-Special Duty, National Library, discussing the retro-conversion process being carried out in the National Library, noted that the National Library gets a large number of documents through legal deposit, exchange and purchase. Besides, it had a sizeable collection of old and rare books and periodicals. The task of retro-conversion was, therefore, a huge one. He maintained that a specialised software had been developed for the purpose and five private parties had been assigned the work of retro-conversion. He said at the moment there was a dearth of experienced professionals who could properly check the work being carried out by the young workers. He disagreed with the view of one of the speakers that the library personnel manning the conservation work in the National Library were not experts in conservation.

2.5.4 Chairman's Remarks

The chairman clarified the remarks made by one of the speakers as referred by the OSD. He said what the speaker wanted to say was that library personnel in general were not expected to be experts in conservation. He expressed the view that there should have been papers in the present conference relating to the method of identifying the types of documents that needed conservation and on the best modes of preservation and conservation. In this context, he affirmed that microfilms had a better longevity than the present age CDs. He felt that the National Library should have a section on the country's musical heritage.

2.6 Marketing of Services and Users' Needs

At the final technical session, chaired by Mr. R. P. Kaushik, a member of the Board of Management, National Library, Kolkata, ten papers were presented, of which two were specifically on the marketing aspect of the National Library services, while the rest were on different aspects of National Library services in India and other countries. Three papers could not be presented due to the absence of the respective authors.

2.6.1 Marketing Aspect

Dr. Roshan Lal Raina, Professor, Indian Institute of Management, Lucknow, expressed his views on 'Developing Marketing Orientation in the Context of National Library, India'. He said that today a National Library could not remain content with its storage and archival functions. It had to play a greater role in creation, capture and use of knowledge and for doing so it should fine-tune its objectives and functions, he added. Dr. Raina said that it was high time that the National Library of India included the marketing factor in its activities. He observed that the library should find out who were the users and arrange to provide services according to their requirements. He also suggested formulation of a marketing plan and marketing strategies for the National Library. He felt that the National Library needed both internal marketing and external marketing to achieve its reoriented objectives.

Mr. N. Sathyanarayana, Managing Director, Informatics India Pvt. Ltd., Bangalore, also pleaded for 'Marketing of National Library Services'. He said that the needs of the client, who, as a tax-payer, indirectly payed for the maintenance of the National Library, should be taken seriously and the services should be rendered according to his or her requirements. He said that the government should ensure autonomous status and adequate funds for the library and should ensure that there was no vacuum or conflict in leadership. He added that the publishers should send their publications to the library in their own interest for their preservation for posterity. He emphasised evolving a new vision for the library.

2.6.2 Other Aspects

On other aspects of National Library services there were four presentations by delegates from abroad and four from India.

2.6.2.1 Views from Abroad

Ms. Olga Kulish of the National Library of Russia, in her paper 'Information Services in the National Library of Russia', elucidated the various types of information services provided by her library, such as Reference Desk Service, Ready Reference Service, Research Enquiry Service, Bibliographical Instruction Programmes, Internet-based information services, etc.

Mr. Ahmed Papi of Iran, while presenting his paper on 'Services of Libraries of Legislation Houses', described how IT was being employed in improving the services of the libraries attached to the legislation houses of

his country. Mr. Akbar Kolahdozan, another delegate from the same country explained the importance of his country's National Library and its services.

Presenting her paper on 'The Legislative Provision of Kazakhstani Librarianship', Ms. Tasybayeva Svetlana Ahmediyevna, Deputy Director General, National Library of Republic of Kazakhstan, mentioned the legislative provision relating to free library service and equal opportunity to all users in Kazakhstan. She mentioned that her library had developed a collection of digital materials, but had found it difficult to digitise an author's work without his or her permission.

2.6.2.2 Views from India

Prof. Prabir Roychoudhury, former Head, Department of Library & Information Science, Jadavpur University, Kolkata, forcefully brought forth 'Some Issues Relating to National Library Service in India'. These issues, he pointed out, were very pertinent as they had emerged through his interaction with the staff members and users of the National Library. The main issues raised by him related to lack of any well-defined policy and plan for the library services in the country, including the services of the National Library; lack of any definite acquisition policy, user education programme and specialised training and research programmes in the National Library; shortage of staff due to non-filling of a large number of posts for long; slow progress of the amendment process of the Delivery of Books Act, digitisation work and conservation work; lack of any networking scheme in its modernisation programme; continuation of lending service; increasing number of unprocessed books; low percentage of deposits under the DB Act and even non-deposit of many official documents by the Central and state governments; neglect of bibliographical services; and lack of any move, such as stock-taking or catalogue rectification, to reduce the incidence of 'not found' books. He observed that the professional issues and programmes of the library should be discussed with the staff members and appropriate steps should be taken to address the issues raised by him.

Presenting her paper on 'Multicultural Diversities and the National Library Services', Ms. Devinder Kaur, University Librarian, Punjabi University, Patiala, pointed out that India was a multi-cultural nation and the National Library had to play a significant role in the cultural integration of the country. She said, to meet the multi-cultural needs of the people, the National Library should expand its services and reach the unreachable. In this context, she stressed integrated library services and setting up of a network of libraries functioning under the Department of Culture, GOI.

She made several suggestions for improving the services of the National Library. She also suggested setting up of an Oral History Division and a National Heritage Council in the National Library.

Ms. Sangeeta Kaul, Network Manager, DELNET, New Delhi, presenting her paper on 'International Interlending and Document Supply: Roadmap for National Libraries', said that the National Libraries should serve as centres for international document delivery service. She mentioned the various barriers for international lending and document supply and suggested some solutions in this regard, such as creation of a virtual union catalogue of the National Libraries of the world, identification of libraries with strong collections in different fields and user-oriented access rather than library-oriented access.

The last paper, entitled 'Emerging Needs for the Improvement of Service Quality of the National Library of India in the 21st Century', was presented by Mr. Atin Nandi of the Indian Institute of Technology, Kharagpur. He discussed the possibility of accessing the services of the National Library through one's own P.C. or mobile and added that the service quality of the National Library could be improved by use of information technology. He also discussed the issues relating to cross-language information retrieval and services to the disabled.

3 The Termination

The curtain went down on the two-day long conference with the valedictory function held on March 16 at the end of the technical sessions. The function was presided over by Prof. P. N. Kaula, former Professor Emeritus, Lucknow University, Lucknow, and the valedictory address was given by Prof. Sib Narayan Ray, former Chairman, Raja Rammohun Roy Library Foundation, Kolkata.

3.1 The Welcome

Welcoming the chairman, Prof. Ray and other guests, Dr. H. K. Kaul, Coordinator, ICONLIS, expressed the hope that ICONLIS would serve as a bridge between the National Library services of the world and it would continue to be organised in different parts of the globe. He maintained that the expertise of all the delegates could not be utilised during the conference due to paucity of time. Some international consultative committees, he noted, had been constituted for the continuance of the activities of ICONLIS. New committees might be created, if and when necessary. These would pave the way for organising the National Libraries in a better way, he hoped.

3.2 The Report

Prof. Amitabha Chatterjee, Rapporteur General, ICONLIS, presented a brief report of the proceedings of the inaugural session and technical sessions. He said that in most of the sessions the number of papers was more than the time available. Hence extensive discussions could not take place. He reiterated the request of the Coordinator, ICONLIS, to the delegates to forward their comments on the talking points circulated earlier, so that their views could be taken care of. He said a fuller report of the proceedings would be forwarded to the Coordinator in due course for necessary action. He thanked his team of rapporteurs for their assistance in recording the proceedings.

3.3 The Recommendations

Prof. A. C. Tikekar, former University Librarian and Head, Department of Library & Information Science, University of Pune, Pune, who had been entrusted with the task of drafting the recommendations, then presented the same for the consideration of the delegates. These related to different aspects of the National Library services in general and the National Library of India in particular. These were approved and it was decided that the recommendations would be properly worded and edited before being forwarded to the relevant authorities.

3.4 The Valedictory Address

Prof. Sib Narayan Ray, in his address, emphasised the seminal role that the library could play in developing the minds of the young people. He remembered that during the four years when he regularly visited the Imperial Library (the predecessor of the present National Library), he learnt more than at any other place. He said that everything was changing because of the second technological revolution and the world had become a small place. He warned about the disaster that the globalisation had brought in its trail. The new technology, he said, was affecting the minds of the young people. There was now no ideology, which could attract them. They were bent on achieving what they wanted to achieve without bothering to think about its consequences on others. He lamented that only 20 per cent of the Indian population enjoyed the same facilities that were available in developed countries, and 50 per cent of the population was still below the poverty line. He stressed that the first priority with regard to library services should be on taking the libraries to the villages. Otherwise, libraries would bring privileges only to the rich people. He felt that common people should be

drafted in the task of collection and organisation of the local materials in the libraries in their own areas. He inquired what the National Library was doing to reach the common people. He said that the National Library possessed a vast heritage which remained unattended. He urged the National Library to play a more useful role so that we do not proceed from emptiness to emptiness.

3.5 Chairman's Address

In his address, the Chairman of the valedictory function, Prof. P. N. Kaula, recalled Ranganathan's contribution to the development of libraries in the country. He observed it was the quality of service that made a library great. A librarian, who helped the reader to get his required information attained moksha. He said that we should try to create a hunger for books among the users and that new technology should be used to help the users. He affirmed that the person heading a National Library should be professionally competent, but unfortunately this did not often happen in India. The National Library should serve the whole nation, but this was also not happening, he added. The rich collection of the library should be put to use and the National Library should serve as a true National Library, he said. He felt happy that India was in the process of establishing a National Book Museum. He stressed that a mass movement should be created for library service. He also suggested that the Indian National Bibliography should include not only books published in India but also books on India published abroad and that efforts should be made to retrieve materials available in the India Office Library, London.

3.5 The Final Words

Dr. Ramanuj Bhattacharya, OSD, National Library, in his vote of thanks, mentioned that many new ideas had arisen in the course of the conference. There were also many suggestions and remarks about the National Library. These would help in formulating an action plan for the National Library, as desired by the Secretary, Ministry of Culture, GOI, he added. He thanked everyone for the grand success of the conference.

4 The Resonance

Along with the technical sessions of the conference, eleven international consultative committees were set up in the fields of (1) Legal Deposit (Chair: Mr. K. Jayakumar, Convener: Mr. Dashrath Thapa); (2) National Bibliographic Control (Chair: Mr. Ngian Lek Choh, Convener: Dr. K. S. Raghavan); (3) Standard for National Libraries (Chair: Mr. Zhang

Xiaoxing, Convener: Dr. A. R. D. Prasad); (4) Collection Development (Chair: Mr. Masashi Murakami, Convener: Antonia Arahova); (5) Inter-lending and Document Supply (Chair: Zulfiqar Ahmad, Convener: Dr. R. Ramachandran); (6) Content Development in Digital Form (Chair: Mr. James Nye, Convener: Dr. E. Rama Reddy); (7) Preservation and Conservation (Chair: Dr. Ramanuj Bhattacharya, Convener: Md. Din Bin Ahmed); (8) Marketing of National Library Services (Chair: Ms. Natalia Berezina, Convener: Roshan Lal Raina); (9) National Library Services for Users (Chair: Ms. Elizabeth Dracoulis, Convener: Jagdish Arora); (10) National and International Cooperation (Chair: Mr. Graham Shaw, Convener: Dr. H. K. Kaul); and (11) Cultural Heritage (Chair: Ven. Rimpoche Mynak Tulku, Convener: Ms. Joan de Beer) held their own sessions to chalk out their future course of action. These committees are expected to continue their work for improving the National Library services and thus the gains of ICONLIS will percolate in the years to come. As hoped by the Coordinator, ICONLIS is likely to be a regular forum for exchange of ideas among the people connected with the National Library services and if this happens it will be a great achievement of the current ICONLIS and will pave the way for better National Library services throughout the world.

ICONLIS 2004

The Action Plan

Recommendations for the National Library, India

H. K. Kaul*

The Recommendations Committee headed by Prof. A. C. Tikekar had made some recommendations for the National Libraries in general. At the concluding function it was decided to request foreign participants to send more inputs to the Coordinator so that the recommendations could be made more detailed and pinpointed. Only a few foreign participants sent their recommendations to the Coordinator. As the Department of Culture wanted an Action Plan to be prepared for the National Library, India on the basis of the recommendations of the experts who participated in ICONLIS, the Coordinator prepared the following Action Plan on the basis of the proceedings of ICONLIS and presented the same to the Department for further action.

A. Collection Development

1. A copy of all printed and non-printed materials produced in India, and on the country and its people published anywhere in the world, besides general reference works, should be available at the National Library. This should remain as the main collection development policy of the National Library. Specialised books published outside India on various other subjects could be acquired by specialised libraries in the country.
2. An Oral History Division should be established in the National Library in close coordination with the Nehru Memorial Museum and Library and other such institutions. Important Indians in various fields and experts who are not covered by other institutions in their oral history projects could be covered by the National Library.
3. Regional depository libraries should collect, besides books, journals and manuscripts, grey literature for preservation and cataloguing purposes.

* Coordinator, ICONLIS

4. For buying electronic publications the National Libraries should keep the following criteria in mind:
 - a. Targeted users;
 - b. Ease of use;
 - c. Coverage;
 - d. Cost;
 - e. Accuracy;
 - f. Licensing;
 - g. Compatibility; and
 - h. Updates.
5. The collections developed also need continuous evaluation in order to be sure that the library is fulfilling its mission to provide material in a timely manner.
6. The diverse culture of India should be promoted by the National Library by collection development and undertaking of suitable projects.

B. Legislation

1. The existing situation under the Delivery of Books Act is far from adequate and requires total overhauling. It was recommended that there is an urgent need for re-examination of the existing system and the introduction of alternative and effective arrangement for the delivery of books to depository libraries.
2. Dissemination of information about each book submitted by a publisher should be made electronically and through print media by the Central Reference Library among the libraries in India and outside India within one month of the receipt of the book by the National Library. This will induce publishers to submit every book they produce very fast to the National Library and the depository libraries.
3. There should be close coordination between the Central Reference Library and the National Library in order to achieve better results. It would be ideal if the Central Reference Library was converted into the Technical Division of the National Library with adequate technical staff from the National Library.
4. With the merger of the Central Reference Library with the National Library, *Cataloguing in Print (CIP)* be introduced.

5. A new legislation should discuss the following issues in detail:
- a. How copyright clearance is obtained for digital documents?
 - b. How digital documents are made part of the Legal Deposit System?
 - c. How to stop misuse of electronic publications? and
 - d. How to safeguard the interests of authors and publishers of electronic publications?
 - e. E-publications should also be acquired by the National Library.
 - f. The penalty for non-supply of books under the Delivery of Books Act should be more.
 - g. The Delivery of Books Act be interlinked with the Copyright Act.
 - h. There should be communication among the depository libraries.
 - i. In every state the registration of books be made compulsory with the Registrar's Office.
 - j. Every state should publish annual list of books published in the state for cross-checking purposes.
 - k. The law should be attractive to publishers.
 - l. Arrangements should be made for regular cataloguing and preservation of books received under the Act.
 - m. The Legal Depository Library/National Library should assign ISBN numbers.
 - n. The management of Copyright Act, Press and Registration of Books Act and Delivery of Books Act should be put under one agency.
 - o. Non-book material should come under the purview of the depository laws.
 - p. Depository libraries and the libraries under the Department of Culture be modernised and networked with the National Library.

6. A National Heritage Depository and a depository library in North East should be started.

C. Standards and Cooperation

a. Standards

1. The National Library should follow the international standards for cataloguing of its publications given below:
 - a. MARC 21
 - b. AACR II
 - c. LCSH/Other Specialised Thesauri
 - d. Dewey Decimal Classification
2. A high grade software for the National Library for its management, cataloguing, digitisation and customer relationships be acquired.
3. Application of IT should enable the National Library to provide services to users in the remote parts of the country.
4. A metadata schema needs to be adopted for use in the National Library in India.
5. The National Library should develop translation/transliteration of metadata for cross language information retrieval.
6. Authority control for India is a must. The National Library of India should undertake this job immediately.
7. Technologies that enable the physically challenged to access information should be adopted.
8. Training programmes should be strictly based on international standards listed above.
9. Dublin Core be adopted.
10. Standards for multimedia based documents be evolved.
11. International standards for preservation of documents be adopted.
12. The service standards should be developed.

b. Cooperation

1. The National Library should develop close cooperation with:

- a. The National Libraries of the World;
 - b. Library Networks in India;
 - c. Library Networks and Institutions specialising in Indian studies outside India.
 - d. IFLA, UNESCO and other international bodies.
2. The National Library should also develop cooperative online shared cataloguing services.
 3. The National Library should play a crucial role in the development of libraries in India.
 4. The National Library should make better use of cultural exchange programmes for building bridges of cooperation with the other National Libraries.
 5. The National Library should establish linkages with the other libraries.
 6. The National Library should establish different sections such as Academic Library Section, Public Library Section and Research Library Section in order to promote cooperation at national and international levels.

D. National Bibliography

1. National Bibliography should be published in print, CD and online forms every month on time, covering books received the previous month by the National Library.
2. A high level of circulation should be achieved for the National Bibliography within the country and outside.
3. Cataloguing of language publications for the National Bibliography be coordinated at the Regional Depository Libraries by the Central Reference Library.
4. Unicode based software for language publications and the standards such as MARC 21, AACR II, LCSH and DDC be uniformly used.
5. Issues such as vocabulary control, cross-language searching, Unicode applications with search facilities be taken into account.
6. Authority files should be maintained.

E. Retro-Conversion

1. Retrospective conversion of the long accumulated material in the National Library should be undertaken in right earnest to catch up with the current trends in library automation.
2. The validation of retro-conversion work done by outside agencies at the National Library should be undertaken with a high degree of care and competency, and tests should be done of the catalogue records created by them so that:
 - a. They conform to the above standards;
 - b. Details given in each catalogue entry are correct and complete; and
 - c. For the purposes of testing the National Library should compare the records thus created with the international databases using the standards mentioned above.

F. Digitisation

1. The digitisation work being done at the National Library should ensure that:
 - a. The books selected conform to the Collection Development Policy of the National Library and special attention be given to heritage and rare works;
 - b. Digitised books are made available online through the Internet and not stacked in CDs;
 - c. Books digitised should be rebound and preserved with proper care;
 - d. Any such book which is likely to disintegrate or fall apart in the digitisation process should not be digitised, however important it may be. Efforts ought be made to get another print or digitised copy of the same book from any other library in the country and outside India;
 - e. Dublin Core be used as a standard for creating meta data; and
 - f. Duplication in the digitisation of titles at the national level be avoided.
2. A National Policy be evolved by the Department of Culture, Government of India for the digitisation of books and other important published works in the country

3. A National Digital Library be established by the Department of Culture, Government of India in collaboration with the National Library, Depository Libraries, various important libraries in India, and Library Networks to facilitate the creation of an exhaustive National Digital Library of India.
4. Directory of digitised works be published.
5. Metadata of digitised works be made available on the Web.
6. The National Digital Library should undertake digital archiving of all types of documents in the country.
7. The National Library of India may undertake state-level digitisation projects. Materials be selected on the basis of physical condition, value, rare value of the document, etc.

G. Preservation and Conservation

1. A national policy for the preservation of printed documents be evolved as many of the rare books in private and public collections are not well preserved and are damaged with the passage of time.
2. The Conservation Unit in the National Library should be upgraded and strict quality control maintained in binding, lamination, de-acidification and other activities associated with the preservation and conservation of printed books and manuscripts.
3. Electronic publications are part of the cultural heritage of the country and should be preserved. The National Library should preserve electronic publications and prepare an archive of all digital material relevant to India and which is of permanent value.
4. The National Library should seek guidance in this field from the experts working in some of the best National Libraries.
5. The National Library may also collaborate with IFLA and UNESCO in this regard.

H. The Staff

1. Application of Information Technology in libraries is being increasingly refined every day. There is a need for continuous in-service training in various divisions in the National Library and for the staff of the libraries of national importance. For this purpose a well drawn-out training plan be introduced with the help of national/international experts which should run for the next few years.

2. There is also a need to have some highly skilled professionals working in the National Library to undertake and initiate positive changes preferably under the guidance of a highly competent Head or an Advisory Group. The present arrangements will have to change if improvement is desired.
3. The skilled staff at the National Library should be able to handle E-traffic and reference queries effectively.

I. Marketing of National Library Services

1. The National Library documents should be put in order before marketing of National Library Services on a regular basis.
2. The National Library, India besides its storage and archival functions should refine its mission statement to accommodate “USER” and “USER SERVICES” in it.
3. Doing so will mean that it will have to:
 - a. Make its collections more easily accessible so that they can be effectively used by more people, at a time and in a way that suits them.
 - b. Reshape those services for which there are alternative sources of information available elsewhere.
 - c. Contribute to the effectiveness of the library within the country as a whole by working with other libraries, networks and systems to improve collaboration and coordination.
 - d. Become a part of the global network of libraries in order to provide access to national and international resources.
4. Going ahead with the “service marketing” approach will necessitate that the National Library:
 - a. Provides information about its content.
 - b. Converts or acquires content in an easily accessible and archivable format.
 - c. Makes the information and content available in user-friendly ways.
5. As such there is a need to develop marketing orientation in the National Library which calls for:
 - a. Identifying users and their information requirements, by following time-tested ‘service marketing’ approaches such as:

- i. Developing a strong Web-interface, to create awareness about its resources, facilities, and services.
 - ii. Developing collections and value-added information products and services that are user- oriented rather than provider-oriented.
 - iii. Developing, for better results, internal marketing orientation for the dissemination of information which makes it necessary to: sensitise, prepare and motivate the National Library personnel to accept the philosophy and face the challenges posed by its introduction.
6. Information should be provided to users irrespective of their geographical locations. In order to extend its services to users living in different parts of the country, in the first phase the National Library should open three branches, one each in Bangalore, Mumbai and Delhi.
7. Users should be categorised before prioritising the services for them and they should be educated about the services of the National Library.
8. The National Library of India should upgrade its Website and provide better reference service manually and electronically.
9. The National Library of India should provide online bibliographic access, access to electronic resources and access to language publications.
10. The services provided by the National Library should be publicised.
11. The National Library of India should maintain a profile of users and monitor the usage patterns.
12. Lending services be discontinued.

J. The Projects

1. The National Library of India should undertake the following additional projects at this stage. It should establish:
 - a. A National Coordination Centre on Cultural Resources.
 - b. A National Resource Centre for Children.
 - c. A National Resource Centre for the Physically Challenged, and

- d. A National Centre for Multimedia Resources.
2. It should also prepare a National Bibliographic Database without duplicating efforts which are already being made in the country.
3. The cultural information for the diaspora was essential and the National Library should undertake the preparation of such works.
4. The National Library should take pro-active role in preserving cultural heritage by undertaking various project at national and state levels.

Conclusion

ICONLIS 2004 has been a major conference on National Library Services in the world this year. Many delegates desired that it should be organised on a regular basis in different parts of the world. Thus, it needs to be promoted.

This Action Plan for the National Library is based on the views of the participants and the recommendations received by the Coordinator from the delegates. Any further recommendations which are received and considered appropriate will be forwarded to the Department of Culture, Government of India.

April 2, 2004

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National Library Services includes 52 papers presented to the International Conference on National Library Services-ICONLIS 2004 organised from March 15-16, 2004 at Kolkata by The National Library, Department of Culture, Government of India. These papers cover a wide range of issues such as National Library System; Document Collection / Multilingual Resources; Digital Handling of National Library Collections; National Library Services; Multicultural Diversities; National Bibliographic Control; The Legal Deposit in a Changing Information Infrastructure; Use of Standards; International Inter-lending and Document Supply; Use of Advanced Information Technologies; Preservation and Conservation of National Library Resources; Users' Services; Marketing of National Library Services among other issues. Papers in this volume highlight the current global views of experts on National Libraries and their services. This volume also includes the proceedings of ICONLIS 2004 and the Action Plan for the modernisation of the National Library, India.



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